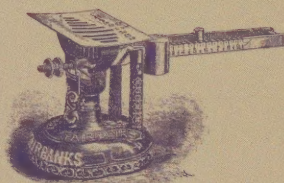
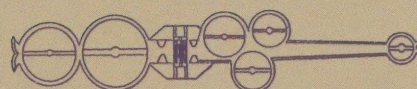
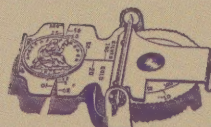


U. S. Coin Scales

AND

Counterfeit Coin Detectors

ERIC P. NEWMAN • A. GEORGE MALLIS



U. S. COIN SCALES and MECHANICAL COUNTERFEIT COIN DETECTORS

By

ERIC P. NEWMAN and A. GEORGE MALLIS

Members of

International Society of Antique Scale Collectors

American Numismatic Society

American Numismatic Association

**With complete U. S. Patent Office
drawings covering Coin Scales and
Mechanical Counterfeit Coin Detectors**

**Including data and drawings of
unpatented Mechanical Coin Detectors**

*Detailed drawings and descriptions of
variations of patented and unpatented
devices as manufactured*

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Eric P. Newman & A. George Mallis

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DEDICATION

**This book is dedicated to the
International Society of Antique
Scale Collectors**

and

**Michael A. Crawforth
(Nov. 7, 1932 - Aug. 28, 1988)
for achievement in preserving
the history of metrology
for the present and future.**

PREFACE

In preparing this book, the authors have endeavored to present the accumulated knowledge that is available to them from various sources of data on coin scales and counterfeit coin detecting mechanisms of the United States. It is natural that this attempt will not be complete or fully accurate. There are coin scales and counterfeit coin detecting mechanisms of the United States that bear patent dates but thus far no patent papers have been found on record at the United States Patent Office Index. In addition, there are coin scales and counterfeit coin detecting mechanisms that are extant but have not been patented. It is likely that there are items that are still to be discovered in the United States Patent Office files under various names and classifications, making discovery difficult.

It is hoped that those who read this book will submit to the authors any additional information that can be used in future amendments or updates of this study.

**Eric P. Newman; St. Louis, Missouri
A. George Mallis; Springfield, Massachusetts**

The binding for this publication has been selected to simplify any substitution of pages which may be made available in the future. The page numbering system is also adapted to simplify revision of a page or group of pages with a minimum of disturbance of other page numbers.

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The authors are indebted to the members of the *International Society of Antique Scale Collectors* who encouraged them to undertake this work and to the following who furnished information and pictorial material.

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Sincere thanks to all of them.

* Deceased

COMPENDIUM OF UNITED STATES
COIN SCALES AND COUNTERFEIT
COIN DETECTORS

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CHAPTER I

HISTORIC BACKGROUND

SECTION 1

ANCIENT NEED FOR MONEY SCALES

The first coins were struck in the Kingdom of Lydia, in Asia Minor about 650 B.C. Long before this historic event scales had been in use. At the time of the XIIth Dynasty in the Middle Kingdom of Egypt, in the second millennium before Christ, there is ample evidence that the equal arm balance scale was in use in that country. Tomb records and drawings of that period show that the soul of the dead was weighed in an equal arm balance scale to try to determine the place of the dead in the hereafter.⁽¹⁾ In biblical times, the use of stone weights is mentioned on several occasions in documents. In the Old Testament⁽²⁾, there are references to the time of King Solomon and his immense wealth. In ancient Jewish weights and measures the terms *Talent* and *Shekel* are used. The *Talent* of silver was a weight and the *Shekel* was a monetary unit. A *Talent* of silver was equal to three thousand *Shekels* and weighed one hundred and fifty (150) pounds. King Solomon was reputed to have received a gift of one hundred and twenty (120) talents of gold from the Queen of Sheba to help him build his first temple. The Queen's gift equaled some eighteen thousand pounds or nearly nine tons of gold. What a "queenly" gift that was! The annual income of King Solomon was reputed to have been about six hundred and sixty six (666) talents of gold or about fifty tons.

The early use of equal arm balance scales was for the purpose of determining the weight of a commodity as against a standard weight. These weights varied from civilization to civilization. Old Jewish weights were made of stone as were the early weights of the Babylonians, Egyptians and even the early Romans.⁽¹⁾ Documents indicate that the ancient Greeks used lead for their weights. Both weights had severe drawbacks. Stone weights chip in use while lead corrodes in air. This use of imperfect weights is strongly condemned in early Jewish history. In Leviticus, Chapter 19, verse 35 it is noted *Ye shall do no unrighteousness in judgment, in meteyard, in weight, or in measure.* Verse 36 admonished the Jews to *Just balances, just weights, a just ephah, (dry measure) and a just hin, (liquid measure) shall ye have*⁽²⁾. From earliest times, governments have attempted to establish and protect weighing methods and systems.

From earliest times equal arm balance scales were used to weigh the gold and silver bullion in trade and commerce. Long before the creation of coined money gold and silver bullion was used to acquire other commodities, goods, services or land. All such transactions required the proper weighing of bullion to determine its value. Such methods did cause problems in the market place. Lead alloyed in a silver bar could have proper weight but be lacking in intrinsic value.

Thus, before coinage, bullion had to be assayed before it was weighed in order to protect the value of the bullion. Early governments attempted to regulate weights in order that these same weights would be acceptable through the territories under their control. To do this, governments attempted to control the manufacture of weights and to specify the material out of which weights should be made. To protect their citizens, governments appointed inspectors of weights and scales and ordered equipment found correct to be so marked. Incorrect weights or scales were condemned and those causing such devices to be false could suffer long terms of imprisonment or in some case, be put to death. The custom of inspecting scales and weights survives to this day. All such devices must be checked periodically by city or town officials specifically delegated for that purpose and such devices must clearly bear the inspector's seal, date and name. The inspector must maintain a record of such inspections and findings.

Ardys (652-615 BC), King of Lydia, recognized the problems in using bullion in trade and commerce. He therefore established a mint in his capitol city of Sardis and started to "mint" money. His early examples were merely lumps of "electrum", a natural deposit of gold and silver with other trace minerals. These lumps were heated and while soft, were put on a plate and struck with a punch. The problem with this natural material is that electrum, as found, varies from lump to lump in its gold content. Thus there was insufficient uniformity in the metallic content of this coinage.

Ardys was succeeded by Alyattes (615-561 BC) who recognized the shortcomings of his predecessor's coinage. He first decided that all of his electrum lumps would have a standard weight of one hundred and sixty-eight grains (168)⁽³⁾. He then decided that the reverse of his coinage would carry a device that indicated that they these were issued by his authority. These two changes were of great significance in that Alyatte's coinage was of uniform weight and had a struck reverse. Of course, even though the coins were of uniform weight, the problem of uncertain gold content in the natural material was still present. These new coins were called *staters* and for the first time, were subdivided into fractions for easier use in commerce.

The legendary King Croesus (561-546 BC), when he assumed the throne on the death of Alyattes, realized that a standard coinage could not be achieved using naturally found electrum. He therefore ordered that all of his coinage be of pure gold. This was a most difficult goal even as late as the 19th Century. Nevertheless, Croesus did manage to have his gold reach ninety-eight (98) percent purity. His coins soon became the accepted standard of the then known world. The importance of scales and weights thus became of paramount importance.

Succeeding civilizations such as the Persians, Hellenic City-States, the Macedonians, Egypt, Rome, Carthage, Byzantium, etc. all coined money and all used the equal arm balance scale. While this sounds very easy to do, it was not until the Egyptians invented the *lotus end* that equal arm balance scales could be relied upon for accuracy.⁽⁴⁾ This device permitted the suspension of each pan to be at the actual end of the beam.

There is ample evidence that scales were in use in Peru during the pre-Colombian period⁽¹⁾ as well as in ancient China.

CHAPTER I

HISTORIC BACKGROUND

SECTION 2

MONEY SCALES DURING THE RENAISSANCE

The Roman Civilization, following that of the Hellenic, carried on the traditions of its predecessor in the fields of art, literature, architecture, etc. Scales for commerce and financial institutions were common and widely used. The Romans are credited with the invention of the *steelyard* type of scale, accurate enough for everyday commercial use but highly inaccurate for use as a money scale. The steelyard has a beam with a fixed fulcrum, a fixed location for the load and a movable weight, which moves along the beam until equilibrium is reached. The steelyard uses the principle of the lever with unequal arms as proposed by the Hellenic genius, Archimedes some two hundred years B.C.⁽⁵⁾. Steelyards became the mainstay of scales for commercial use in western Europe and the Americas, until well into the 19th century.

The Romans in occupying most of Europe including a large part of Great Britain put large amounts of Roman money in use and coin scales were a way of life.

About 752, Pepin the Short (751-768), King of the Franks, demonetized all gold coinage. In its place he issued a new coin in silver, which he designated as a *NEW DENIER*. This coin became the model for the silver coinage of Europe and was the model for the English silver penny. This silver coinage was the standard until the 13th century when Frederick II (1215-1250), Emperor of the Holy Roman Empire, decided to revert to the ancient coinage of his previous emperors and issued gold coins *SOLIDI* and half *SOLIDI* denominations while the City States of Italy were issuing gold coins in the early 13th century. Thus scales were necessary to weigh money.

With the *Renaissance* of western Europe came the great explosion of commerce and industry. New discoveries were made almost daily and the marketplace became a common scene in the large and small communities. With this explosion, came the need for accurate scales and weights, not only for the goods of commerce, but for use in banking and exchange. Money at that time being accepted only at its intrinsic value and not by count or by name such as *Angel*, *Louis d'or* or any other designation. There are several paintings of this era that show *bankers* and *money changers* with scales in their shops, weighing coins. (Page 6; photo of Money Lender and His Wife)

In the early 16th century, vast amounts of silver were found in the area of Joachimsthal, Bohemia. These huge silver deposits were used to coin large silver coins that became the forerunner of the so called *CROWN*

size coins. These coins were called *GULDENGROCHEN* and carried on them an image of Saint Joachim, the patron saint of the valley. Common usage of the time, called these coins as *JOACHIMSTHALERS* or "coins of the Joachim valley". In time the Joachim was dropped and these coins were called *THALERS* from which the term *DOLLAR* evolved. With this profusion of new money onto the marketplace, rulers and kings, tried to standardize their coinage so that it would be acceptable in world markets. Among the early exponents of standard coinage was King Henry VII of England. It was he, who issued a proclamation specifying that one troy ounce of silver was to be coined into twenty silver *PENNIES*⁷. leading to the use in England of the term *POUND STERLING* for their monetary standard.

By the 17th century scales of the renaissance became more accurate and to the equal arm balance scale and the steelyard was added the *BISMAR*. This latter scale has an unequal arm beam with a fixed counterweight at one end and a means of suspending a load at the other end, usually on a hook. The fulcrum is movable along the beam until equilibrium is reached. Predetermined markings on the beam show the weight of load. This type of scale being very inaccurate, was not used for the weighing of gold or silver coinage.

The most common scale used to weigh gold or silver in this period remained the equal arm balance scale. Superb examples exist of Dutch, German, French and English manufacture. These scales usually are found with *monetiform* weights, to be used in weighing specific coins. *Monetiform* is a numismatic term meaning "in the form" of a specific coin. It should be noted that during this period, few could read, write or had significant knowledge of mathematics. Thus it was essential that *COIN WEIGHTS* be made by so that those using them did not have to have any ability to read or do simple mathematics. A specific coin weight was selected to be used in an equal arm balance scale to test the coin in question. It is not unusual to find boxes for these coin scales with monetiform weights for a dozen or more current coins of European countries.

MONEY SCALES DURING THE RENAISSANCE
(MONEY LENDER AND HIS WIFE)
(Painting by METSYS from the Archives
of Photographs of Art and History, Paris)



N° 2029 - Metsys - Le prêteur et sa femme

Archives Photographiques
d'Art et d'Histoire, Paris
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CHAPTER I

HISTORIC BACKGROUND

SECTION 3

THE BEGINNING OF COUNTERFEIT COIN DETECTING MECHANISMS

There is a "Tongue in cheek" saying among numismatists, that if the first coins were struck in the morning, then the first counterfeit coins appeared later the same day. While this may be an exaggeration of counterfeiting, it is true that counterfeiting is as old as coins themselves. Counterfeiting coin of the realm was usually punishable by death, yet counterfeiting has always existed. It still exists today even with all the sophisticated methods employed by governments to eradicate it. While modern civilization does not usually condone the execution of counterfeiters, it does imprison them for long periods.

Coins of gold or silver contained an intrinsic value of metal equal to the amount for which they were current. When a gold coin had twenty dollars in its legend it meant that it contained virtually twenty dollars worth of gold. A coin was accepted on the basis of its metallic content when used in other than its country of origin. Even in its own country, coins would often be tested to make sure that they were of proper weight before being accepted.

Early attempts made by governments to maintain their coinage standards were the introduction of weights by which the weight of a proffered coin could be tested. Efforts were made in ancient Egypt, Babylon, Persia, the Hellenic City-States and Rome, to have standard coin weights. The Arabic people, being expert mathematicians, made glass weights of remarkable accuracy as early as 750 AD⁽¹⁾. One problem that faced these efforts to standardize the weights among various nations, was that each nation set its own standards on weights. Even as late as the 19th Century, European countries could not agree how many grains constituted a *Pound* of gold or silver. Equating the various weights of some of western Europe to the standard metric system units shows great divergence. The *Mark of Cologne* (Pound) was equal to 467.62 grams, the *Troy Pound of England* was 373.246 grams, the old Dutch weight *Troy pound* was equal to 492.168 grams and the French *Pound* (livre) was equal to 489.5 grams in Paris. There were various other standards used in several of the cities of France.

A second problem that confronted early governments was the basic design of the coins of the time. All coins were hand struck from dies that produced an obverse and a reverse. The edges of these early coins were plain well into the 16th Century. This permitted the "filing and clipping" of the edges of the coin without noticeable damage, thus reducing its weight. This wide spread practice lead to the marking of the edge of coins. One of the early devices was that of providing a segmented collar with design letter-

ing around the edge of the blank or planchet before striking. The pressure of the striking of the blank by the dies forced the metal against the collar and thus an impression was created on the edge of the coin⁽⁷⁾. This method invented in the 16th Century was not practical for use. The use of an "Edge Lettering Machine" by Castaing in the 17th Century, to roll an edge design onto the planchet before striking changed coinage and continued in use until the 19th Century when solid collars could apply simple edge designs during striking such as a reeded edge⁽⁷⁾.

It is obvious that the practice of clipping or filing coins became more difficult with either a lettered edge coin or a reeded edge coin. It was then the custom, for those who transacted business, only to weigh the coins before accepting them. Still, merely weighing a coin does not establish its authenticity. Base metals can be used to provide the proper weight, particularly of silver coins, by introducing lead, etc., into the mixture. The story of Archimedes (287?-212 BC), the Athenian mathematician and inventor, and his determination of the composition of the gold crown by a non destructive method is known to every school child. However, even this remarkable discovery was not practical to use in every day commerce to judge every coin. The principle that Archimedes discovered was specific gravity as a measure of the density or mass of an object. Such a test still cannot determine metallic composition in many instances. Casting coins or making false dies enable adulterant metals to be used for content with and without silver or gold content.

These problems caused a need for the invention of *Counterfeit Coin Detectors*. Just how does a counterfeit coin detector work? It is a fact that base metals, generally have a specific gravity less than gold and silver. Therefore, if a counterfeit coin has the same diameter and the same thickness as a genuine coin, then its weight must be less than the genuine coin. If the weight of the counterfeit is the same as the genuine, then either the thickness or the diameter must be greater than the genuine coin. This is the basic principle upon which counterfeit coin detectors operate. The ability to determine thickness and diameter, in addition to weight, is what distinguishes a counterfeit coin detector from a scale. This applies to counterfeit coins for circulation in the marketplace and to forgery of coins for sale to collectors for numismatic purposes.

Just when in the 19th century the first counterfeit coin detector was invented or made is not now known. The great advantage of the counterfeit coin detector over the equal arm balance scale is two fold. It not only weighs but checks the size of the coin and it did not require any separate weights to function.

CHAPTER I

HISTORIC BACKGROUND

SECTION 4

COIN SCALES IN COLONIAL AMERICA

It is certain that when the colonists from England, France and Spain first came to what is now the United States, they did not have any money scales with them. They relied primarily on the barter system among themselves due to lack of money. One could survive without money but that which his neighbor had to exchange in the way commodities or services was more important. The colonists were primarily farmers, hunters and workmen. They could trade for those necessities that they themselves did not produce. The native American money made from shells into strings of blue and white beads called *WAMPUM*, which had legal status in Massachusetts Bay Colony as early as 1640 when the General Court established the value of wampum with *white to pass at four and blues at two a penny*. Wampum was used not only in the New England area but colonists in New York used it and called it a *SEAWAN*, while in Virginia it was called *ROENOKE*. Counterfeiting *WAMPUM* was a problem.

The hides and furs of animals were also extensively used as a medium of exchange, particularly in the French settlements in the central part of the Colonial North America.

The earliest coin scales for general use in Colonial America appear to have made their appearance about 1740. The scales of that period were made in England and sent to the colonies as part of the trade with the mother country. These scales were sold in the cities of Boston, New York and Philadelphia. They are of the equal arm balance type and have pennyweight and grain weights in their scale boxes. Many of these weights show a *Lion Passant*, which was the hallmark of the Goldsmiths Hall of London. The scale boxes were usually made up of six oak strips held together with wire fasteners. On the underside of the lid there was usually a paper label showing the weight or value or both of foreign coins. Some labels were engraved and printed in America also showing the equivalent value in the money of account of the various colonies.¹⁰ A photograph in Chapter III, SECTION 1 depicts such a scale box label which indicates the value of *OLD TENOR*, in specie, *TENOR* being the issued value of paper money issued pursuant to Orders of the Council of the Massachusetts Bay Colony. A similar scale is shown by Sheppard & Musham as made circa 1740.¹⁴

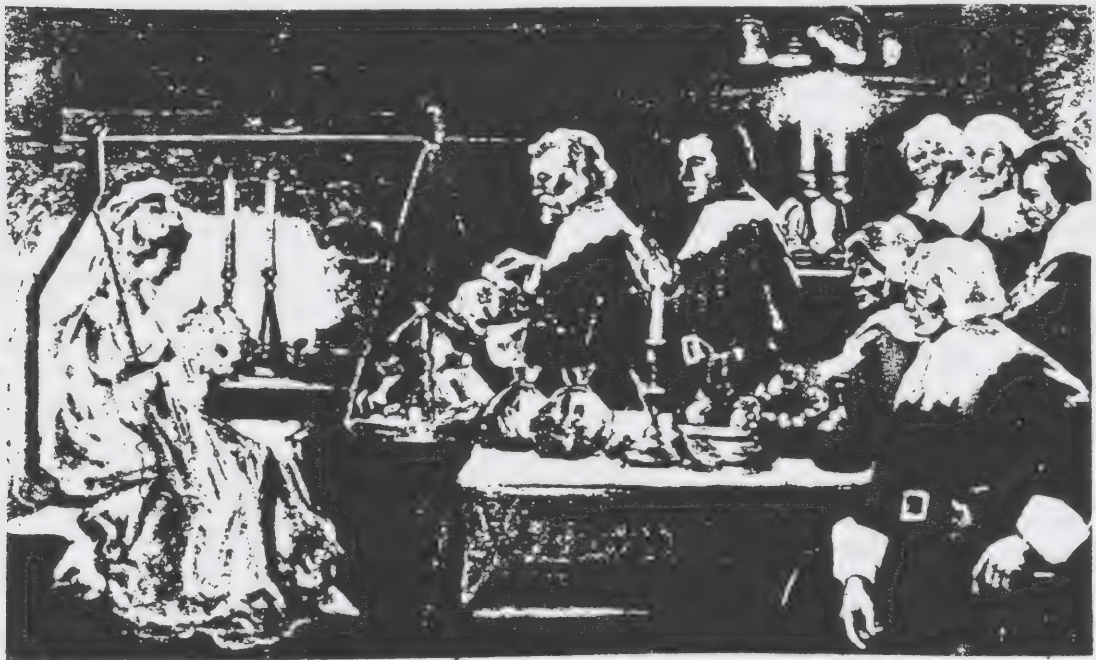
While coin scales first came into general use about 1740, other types of scales had been in use in the colonies long before then.

Massachusetts Bay Colony with no permission from the Crown, issued silver coins dated 1652¹¹ struck by John Hull (1624-1683) a silversmith¹¹.

Metrologically there is an unverified tradition that John Hull, Master of the Massachusetts Bay Colony silver coinage Mint, on the marriage of his daughter Hannah to Samuel Sewall, on February 24, 1675/76, determined the amount of her dowry by having her sit on one pan of a scale at his warehouse in Boston and balancing her on the other pan with Pine Tree shillings he had minted. The novelty of this fiction has kept it popular rather than any advantages of obesity. The evidence shows that Samuel Sewall entered in his ledger at the time of his wedding the receipt from his new father-in-law of £500 in value, but only £65 in money, £30 shortly before the wedding and £35 shortly after the wedding. This requires the tale (no monetary counting pun intended) to be modified so that Hannah's weight was merely determinative of the total value of the dowry. The sum of £500 or 10,000 shillings was equal to about 1500 Troy ounces or 125 pounds of silver Pine Tree shillings. Hannah's weight with winter clothing would then be normal since no one has challenged the accuracy of the scale.

The celebration of her silver wedding anniversary would have been a good occasion to release the story.

FULL WEIGHT AND QUALITY
(Courtesy, Edward Clarke Streeter Collection
of Weights and Measures, Yale Medical Library)



Due to the differences of money of account in various colonies in America, scale labels as well as published exchange tables sometimes had coin values in more than one colony shown. As an example, the value of certain foreign gold and silver coins are shown in English pounds, shillings and pence, Philadelphia pounds, shillings and pence and New York pounds, shillings and pence, each being different from the other.

Joseph Richardson of Philadelphia imported boxed scales and weights from England, carefully adjusted each weight to his satisfaction and had labels printed in Philadelphia showing the Pennsylvania money of account value and the weight of common foreign gold and silver coins.

A boxed scale from the collection of one of the authors was made in England as evidenced by the pennyweight and grain weights, which are marked with the *Lion lion Passant*, a hallmark of the Goldsmiths Guild of London. The label, engraved in Boston, shows that it was sold by *R. Billings, Corn Hill, Boston*, who was a merchant circa 1749. The label indicates the value of several coins in *OLD TENOR*, meaning the early public paper money issued by the Massachusetts Bay Colony before inflation resulted in new tenor and middle tenor values.

TABLE OF COINS
ENGLAND, PHILADELPHIA, NEW YORK

(Printed in *Father Abraham's Almanack for 1759*
by *Abraham Weatherwise of Philadelphia*)

| A Table of COINS, as they now pass in the following Places. | | | | | | | | | |
|---|----------|----|----|--------------|----|----|----------|----|----|
| | England. | | | Philadelphia | | | N. York. | | |
| | l. | s. | d. | l. | s. | d. | l. | s. | d. |
| English Sixpence, | 0 | 0 | 6 | 0 | 0 | 9 | 0 | 0 | 9 |
| English Crown, | 0 | 5 | 0 | 0 | 7 | 6 | 0 | 8 | 0 |
| French Crown, | 0 | 5 | 0 | 0 | 7 | 6 | 0 | 8 | 0 |
| Guinea, | 1 | 1 | 0 | 1 | 14 | 0 | 1 | 16 | 0 |
| Spanish Pistole, | 0 | 16 | 0 | 1 | 7 | 0 | 1 | 9 | 0 |
| French Pistole, | 0 | 16 | 0 | 1 | 6 | 6 | 1 | 8 | 0 |
| Moydore, | 1 | 7 | 0 | 2 | 3 | 6 | 2 | 6 | 0 |
| Johannes, | 3 | 12 | 0 | 5 | 15 | 0 | 6 | 6 | 0 |
| Half Johannes, | 1 | 16 | 0 | 2 | 17 | 6 | 3 | 3 | 0 |
| Doubloon, | 3 | 6 | 0 | 5 | 8 | 0 | 5 | 16 | 0 |
| Spanish Dollar, | | | | 0 | 7 | 6 | 0 | 8 | 0 |
| Pistereen, | | | | 0 | 1 | 4 | 0 | 1 | 6 |

N.B. All sorts of Spanish Silver are fold in London, by the Ounce, and often varies, but seldom or e. it exceeds 5s. 5d.

A TABLE of the Value and
Weights of Coins, as they now pass
in Pennsylvania

(R. Saunders, A Pocket Almanack for 1751, printed by
B. Franklin, Philadelphia, 1751)

| A TABLE of the Value and Weight of Coins, as they now pass in Pennsylv vania. | | | |
|--|--------|----------------------|---------|
| | Value. | | Least |
| | £. | s. d. | Weight |
| | | | Av. Gr. |
| E Ngl. Guineas at | 1 | 14 0 | 5 6 |
| French Guineas | 1 | 13 6 | 5 4 |
| Moidores - - - | 2 | 3 6 | 6 18 |
| Johannes's - - - | 5 | 15 0 | 18 8 |
| Half Johannes's - | 2 | 17 6 | 9 4 |
| Carolines - - - | 1 | 14 0 | 6 5 |
| Dutch or Ger. Ducat. | 0 | 14 0 | 2 4 |
| French milled Pistoles | 1 | 6 6 | 4 4 |
| Spanish Pistoles | 1 | 7 0 | 4 6 |
| Arabian Chequins - | 0 | 13 6 | 2 3 |
| Other Gold Coin, per | | | |
| Ounce - - - - | 6 | 5 0 | |
| French Silver Crowns | 0 | 7 6 | 17 6 |
| Spanish milled Pieces | | | |
| of 8. - - - - | 0 | 7 6 | 17 6 |
| Other good coined Span. | | | |
| Silver, per Ounce | 0 | 8 6 | |
| The Proportion of Gold to Silver, in England is, as 1 : 1 : : 15 $\frac{1}{2}$: | | | |
| 1 Ounce Troy of Gold (22 Car.) | | | |
| is worth Sterling | £. | 3 17 8 $\frac{1}{2}$ | |
| 1 Ounce Sterling Silver, | 0 | 5 2 | |

A TABLE of the Value and
Weight of COINS as they now pass
in England, Pennsylvania, and New York

(Pocket Almanack, Philadelphia 1761)

| A TABLE of the Value and Weight of COINS, as they now pass in England, Penn- sylvania, and New-York. | | | | | Sterling | | Phi ^a . d. | | N. York | | Weight. |
|---|------------------------|---|----|---|----------|----|-----------------------|---|---------|---|---------|
| | | | | | £ s. d. | ¢ | £ s. d. | ¢ | £ s. d. | ¢ | |
| In Roffon and Connecticut Pieces of Eight pass for 6s. and Gold by Weight. | Engl. Guineas at | 1 | 1 | 0 | 1 | 14 | 0 | 1 | 16 | 0 | 5 |
| | French Guineas | 1 | 1 | 0 | 1 | 13 | 6 | 1 | 15 | 0 | 5 |
| | Moidores | 1 | 7 | 0 | 2 | 3 | 6 | 2 | 6 | 0 | 18 |
| | Johannes's | 1 | 12 | 0 | 5 | 15 | 0 | 6 | 6 | 0 | 18 |
| | Half Johannes's | 1 | 16 | 0 | 3 | 17 | 6 | 3 | 3 | 0 | 9 |
| | French milled Pistoles | 1 | 16 | 6 | 1 | 6 | 1 | 8 | 0 | 0 | 4 |
| | Spanish Pistoles | 0 | 16 | 6 | 1 | 7 | 0 | 1 | 9 | 0 | 4 |
| | Doublons | 3 | 6 | 0 | 5 | 8 | 0 | 5 | 16 | 0 | 0 |
| | English Crowns | 0 | 5 | 0 | 0 | 7 | 6 | 0 | 8 | 0 | 19 |
| | French Silver Crowns | 0 | 5 | 0 | 0 | 7 | 6 | 0 | 8 | 0 | 17 |
| | * Spanish Pieces of 8 | 0 | 0 | 0 | 0 | 7 | 6 | 0 | 8 | 0 | 17 |
| | English Six-pence | 0 | 0 | 6 | 0 | 0 | 9 | 0 | 0 | 9 | 6 |

* Most Sorts of Spanish Silver are
sold in London by the Ounce, and
often varies but seldom or ever
exceeds 5s. 5d. In Pennsylvania
it sells for 8s. 6d. per Ounce.

A TABLE of the VALUE and
WEIGHT of COINS as they now pass
in PENNSYLVANIA

(Courtesy of Eugene P. Mahoney)
(English imported box by Joseph Richardson; circa 1751-1756)
(Copied by EPM; from label in Philadelphia)
(Museum of Art; from photo by A. J. Wyatt)

| A TABLE of the VA- LUE and WEIGHT of COINS, as they now pass in PENNSYLVANIA. | | | | |
|--|--|--|---|---|
| ENGLISH Guineas, French Guineas, Moydore's, — Johannes's, — Half Johannes's, — French Pistoles, — 4 Spanish Pistole Pieces, 2 Spanish Pistole Pieces, 1 Spanish Pistole, — Half a Spanish Pistole, Caroline's, — Spanish Pieces of Eight, | — — — — — — — — — — — — | 1 1 2 3 3 5 5 2 1 0 1 0 | 5. 4. 0 0 0 6 6 6 6 6 6 6 6 | 4wt. gr. 5 5 5 5 5 5 5 5 5 5 5 5 |
| Gold Scales and Weights, Sold by JOSEPH RICHARDSON, Goldsmith, in PHILADELPHIA. | | | | |

CHAPTER I HISTORIC BACKGROUND

SECTION 5 MECHANICAL COUNTERFEIT COIN DETECTORS IN THE UNITED STATES

By the middle of the 19th Century, the growing United States had reached full maturity. The problems that had beset the nation in the late 18th and early 19th Century had been substantially overcome and westward expansion had been achieved with the discovery of gold in California at Sutter's Mill in 1848. The subsequent Mexican War of 1850 brought large former Mexican territories under United States control. This resulted either by purchase, or cessation by Mexico, of what is now California, Utah, Nevada, Arizona and New Mexico to the United States. The vast amount of gold found provided great wealth to the American economy. Until 1857, foreign money was legal tender in the United States by several Acts of the Congress. With the inflow of domestic gold and silver, the United States in 1857 demonetized foreign coins and for the first time, only United States coins were legal tender.

The first known United States counterfeit coin detecting mechanism was first used in Philadelphia in the 1834-1837 period and was not patented.* The first patent for such a device was on July 13, 1853, when a patent, number 9844, was granted to Henry G. Robinson of Schuylkill Haven, Pennsylvania. This device consisted of a metal tube that had an opening at the top with a slot that was equal to the thickness of the coin to be measured. The diameter of the tube was equal to the proper diameter of the coin. The coin in question was suspended from a clamp that was part of the tube with the weight of the tube acting as the counterweight. Apparently, Robinson either had the idea independently by himself or else he had knowledge of the *Portable Money Balance* of G. Riddle of London who had registered a similar device on June 17, 1842 with registration number 1312. The English counterfeit coin detecting mechanism is substantially the same as that of Robinson but did not allow for the checking of the thickness or diameter of the English coin, only its weight. These two items of checking the thickness and diameter of the coin made Robinson's device a true counterfeit coin detector while Riddle's was only a coin weighing device. Note: that Robinson's mechanism could be used for only one coin and not for multiple denominations as the case of later mechanisms. A separate Robinson mechanism was required for each denomination of coin to be checked. Thus, this was a rather limited device and of a doubtful major use.

Shortly after the issuance of the Robinson patent, Gideon B. Smith of Baltimore, Maryland invented and patented under patent number 9997, dated September 6, 1853, a multicoin counterfeit coin detecting mechanism. This mechanism consists of a flat plate that has a number of slots cut into its surface. Each slot was of the width and diameter of a specific coin to be gauged. Under each slot was a weighted lever onto which the coin sits.

Each lever has a counterweight that allows a full weight coin to trip the lever and allow the coin to pass through onto a tray. A light weight coin will not trip the lever indicating a counterfeit coin or a coin of light weight.

From these beginnings came a several dozen more counterfeit coin mechanisms and coin scales for American coinage. These extended into the early 20th Century.

CHAPTER II

UNITED STATES PATENTS

SECTION 1

BASIC TYPES OF SCALES AND U. S. EQUAL ARM BALANCE SCALES

The patents for the United States coin scales and counterfeit coin detectors are numerous. As noted earlier in the text, there are three basic types of scales. These are the equal arm balance, the steelyard and the bismar. All three types were used in the United States for coin scales and counterfeit coin detectors, therefore a discussion of these types is necessary to fully understand the terms and meaning of each.

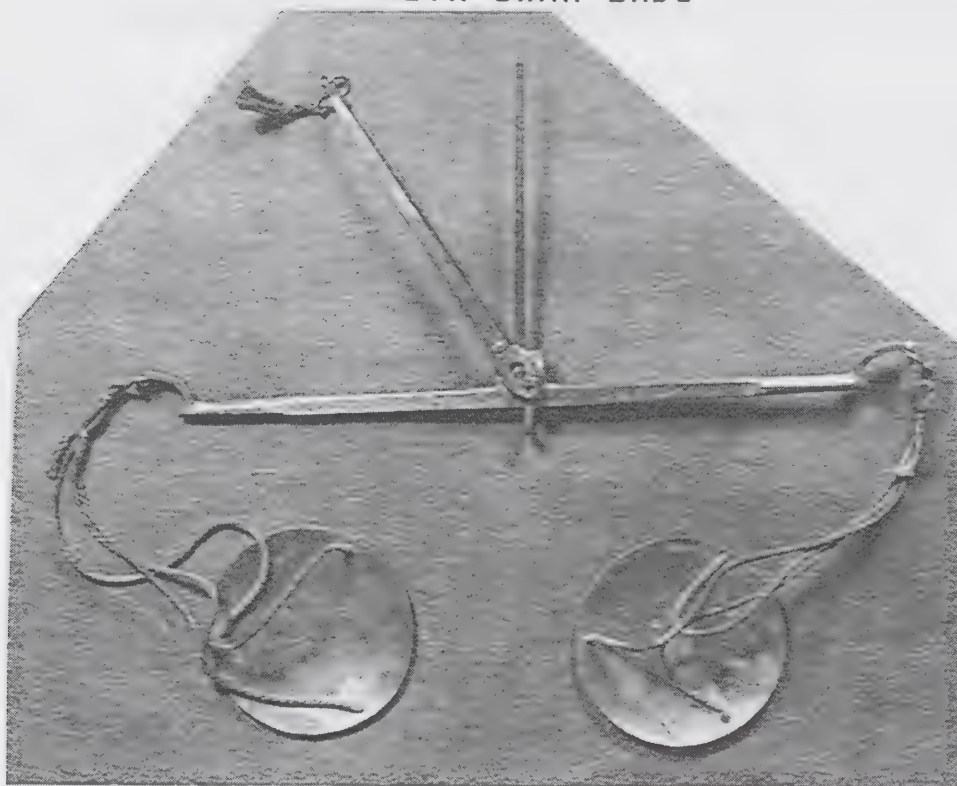
EQUAL ARM BALANCE SCALES:

Equal arm balance scales have been in use from the time of the Biblical Israelis and Egyptians and were copied by those civilizations that were contemporary and thereafter. An equal arm balance scale has a horizontal member or beam with suspended pans at each end. The device is held and the item to be weighed placed on one pan and the weight or weights on the other. This was a tedious process that involved adding weights to the weight side until the pans were level. To simplify this process, a pointer was placed at the mid point of the horizontal member or beam and above this was built a small gallows with a suspension cord by which the scale is hand held. The pointer within the gallows allows the holder to determine when the pans are of equal weight. The difficulty with this device was the ability to suspend the pans exactly at the same levels from the horizontal bar. The Egyptians solved this problem by their invention of the *SWAN NECK* ends (lotus ends) to the beam. (See Photograph which indicates an 18th century common type equal arm balance scale with its swan neck ends, pointer, suspension gallows and typical flat pans).

This was, and is, an extremely accurate instrument but it requires some ability to use it properly, because the pennyweight and grain weights often got lost during the times the scales were used. Some boxed examples of money scales did not use loose pennyweight and grain weights but relied on coin weights. These were made of brass to the exact weight of the coin being checked less allowable wear. Weights made of material, other than brass, are rare. (Shown is a typical boxed scale of the early 17th century with weights to weigh many, then current, coins issued in Europe. Note that each weight shows the specific coin the weight is to be used with.

Very often, even into the late 18th century, weights used to weigh coins resembled the coin with which these were to be used. Such weights are called *MONETIFORM*; e.g., resembling the coin. (Photograph is an example of two monetiform weights).

TYPICAL EQUAL ARM BALANCE
WITH SWAN ENDS



TYPICAL BOXED MONEY SCALE

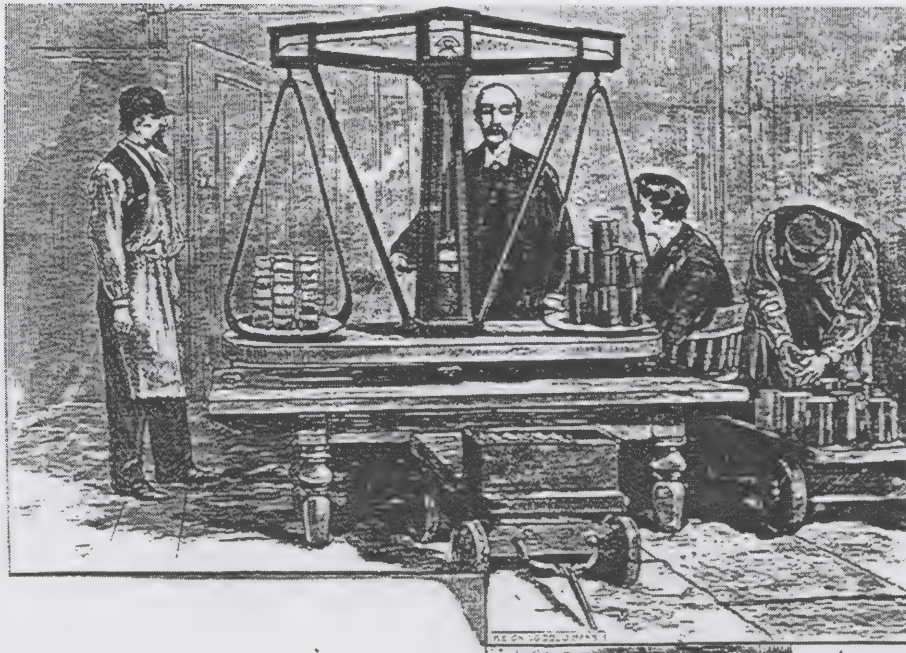


TYPICAL MONETIFORM WEIGHT



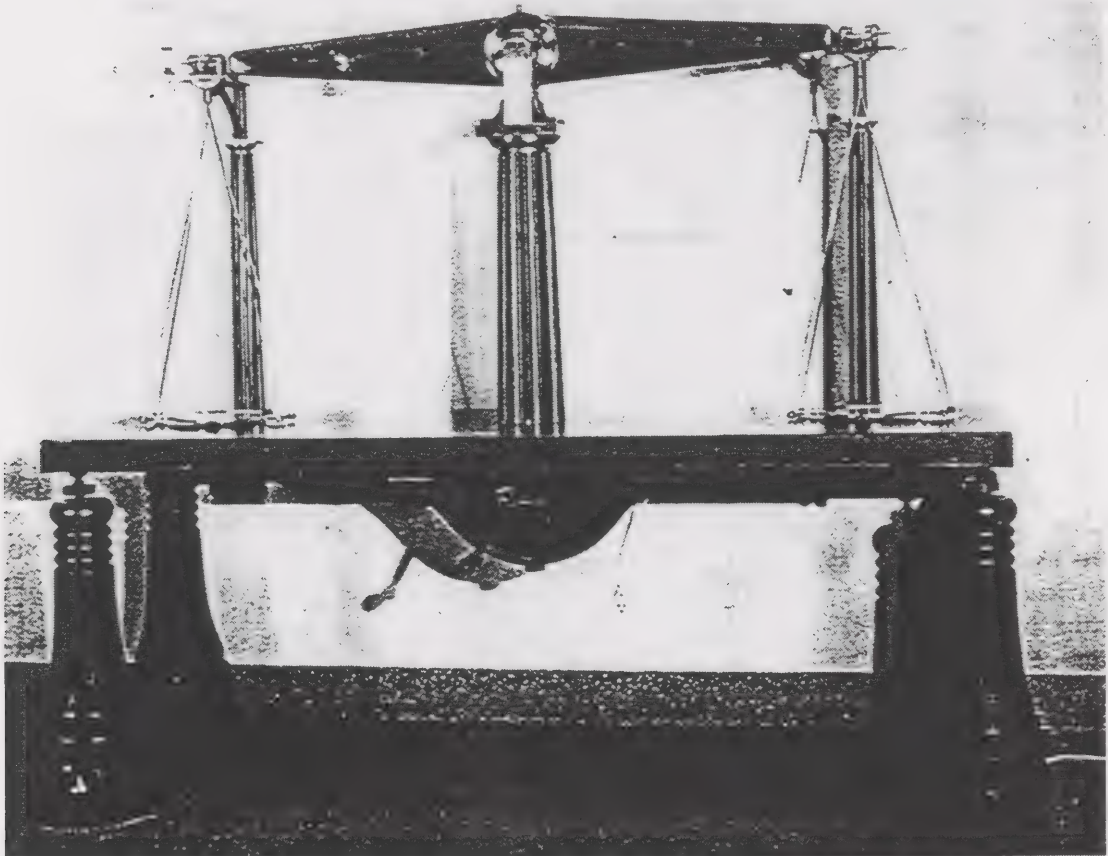
EQUAL ARM BALANCE SCALES
AT THE UNITED STATES MINT
WEIGHING GOLD BARS ON A LARGE
EQUAL ARM BALANCE SCALE

(From Harper's Weekly, Jan. 14, 1882)

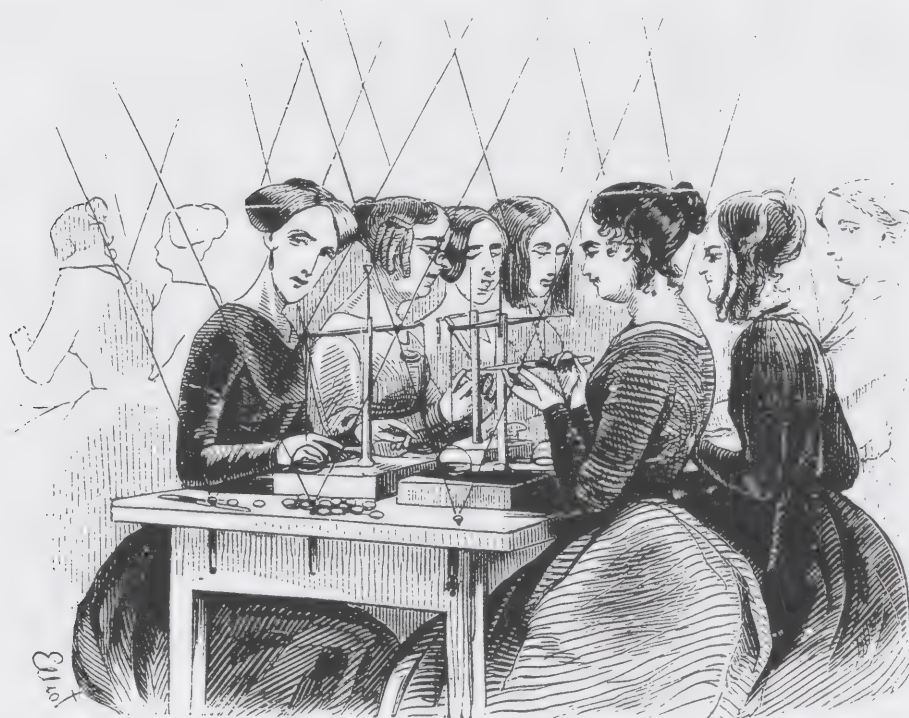


**EQUAL ARM BALANCE SCALES AT THE
UNITED STATES MINT**

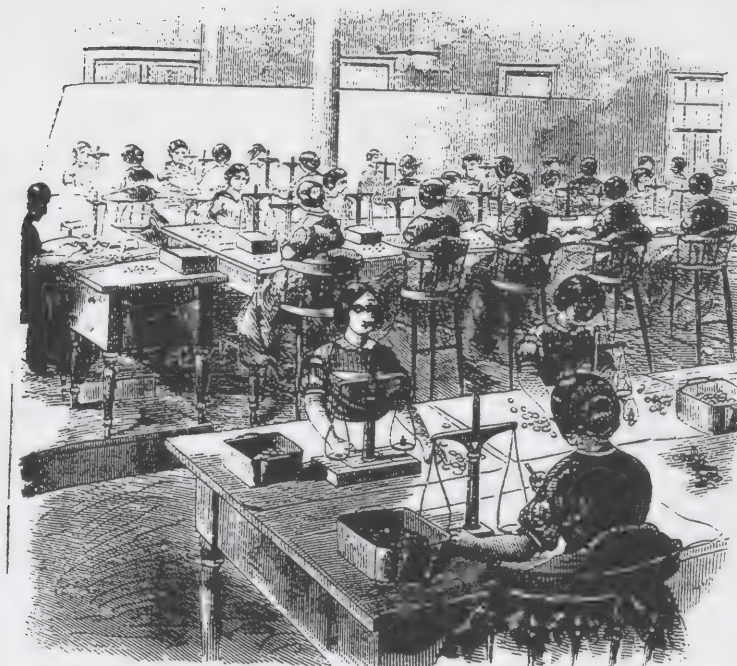
Joseph Saxton (1791-1873), a self-trained master mechanic originally from Huntington, Pennsylvania who moved to London, England, was selected in 1835 by Franklin Peale (1795-1870) with the approval of Samuel Moore, Director of the U.S. Mint, to make a balance for the U.S. Mint in Philadelphia. No detail of this instrument is known other than its cost of £26 and it was brought to Philadelphia. Five more were promptly ordered at the same price, one for the Philadelphia Mint, two for the new New Orleans branch mint, and one each for the new Charlotte and Dahlonega branch mints. Saxton was encouraged to return to America which he did in 1837. A larger balance he made for the Philadelphia Mint in 1838 is illustrated below and cost £140.



EQUAL ARM BALANCE SCALES AT THE
UNITED STATES MINT
ADJUSTING COIN BLANKS USING
EQUAL ARM BALANCE SCALES
(From Illustrated American News, Aug. 9, 1851)



THE INTERIOR OF THE MINT—THE ADJUSTING ROOM.



(from Harper's
Monthly
Nov. 1861)

EQUAL ARM BALANCE SCALES AT THE U.S. MINT

Elias Bondinot, Director of the U.S. Mint, in presenting an inventory of the assets of the Mint to Albert Gallatin, Secretary of the Treasury, on March 22, 1802 included "six sets assay scales, and sundry adjusting scales."

* * * * *

A visit to the planchet adjusting room at the U.S. Mint is described by Waldo Abbot in **Harper's Monthly** for November 1861 as follows:

"What a peculiar noise, like a young ladies' school at recess, only a strange filing sound withal! Nearly sixty females, some young and pretty, some—middle-aged and fine-looking.

"Each operator has on the table before her a pair of assay scales. Seated close to the table, a leather apron, one end tacked to the table, is fastened under her arms to catch any gold that may fall. In short sleeves, to avoid sweeping away the dust, and armed with a fine flat file, she is at work, chatting and laughing merrily. She catches a double eagle planchet from a pile by her side and puts it into the scale. It is too heavy. She files it around the edge, and weighs it. Still too heavy. Files it again, and weighs it. Almost right. Just touches it with the file. Right; the index is in the centre. She tosses it into the box, and picks up another to undergo the same operation.

"To adjust a coin so accurately requires great delicacy and skill, as a too free use of the file would quickly make it too light. Yet by long practice, so accustomed do the operators become, that they work with apparent recklessness, scarcely glancing at planchet or scales, but seemingly guided by their touch.

"The exceedingly delicate scales were made under the direction of Mr. Peale, who greatly improved on the old ones in use. So delicate are they that the slightest breath of air affects their accuracy, rendering it necessary to exclude every draft from the room, which, being poorly ventilated, in a hot day is an uncomfortable and probably an unhealthy place. Colonel Childs, the late chief coiner, exercised great care to counteract this difficulty by occasionally stopping work, and opening the windows.

"The females in the adjusting room are paid \$1.10 a day for ten hours' work. They look happy and contented. Behind the screens, at each end of the room, are dining-halls, where they eat the dinners they bring with them. On the whole, it is the pleasantest work-shop for women we have yet seen, and the pay, in comparison with that ordinarily given to women, is good."

EQUAL ARM BALANCE SCALES
AT THE UNITED STATES MINT
WEIGHING COIN SAMPLES IN BULK USING A
LARGE EQUAL ARM BALANCE SCALE

(From Leslie's, Mar. 4, 1876)

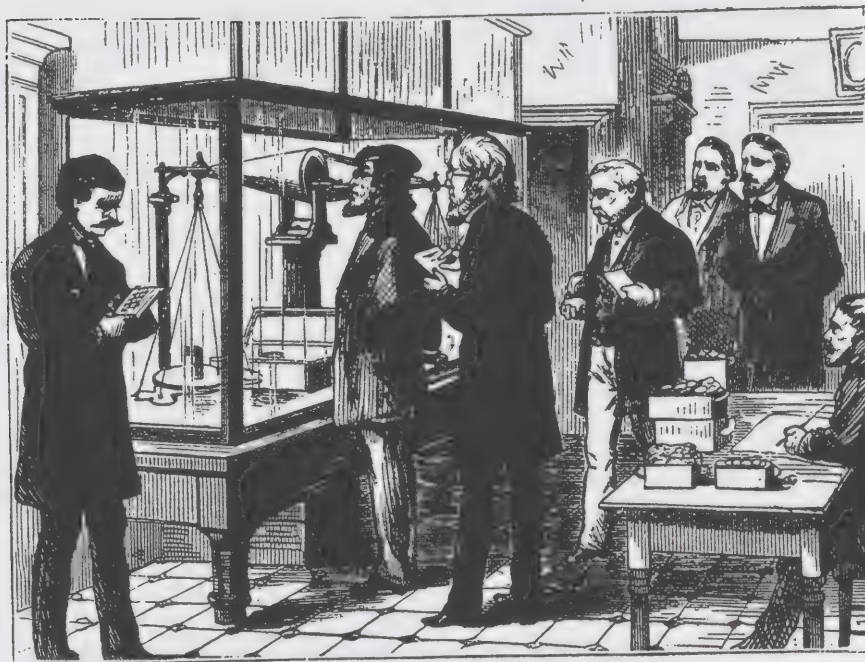
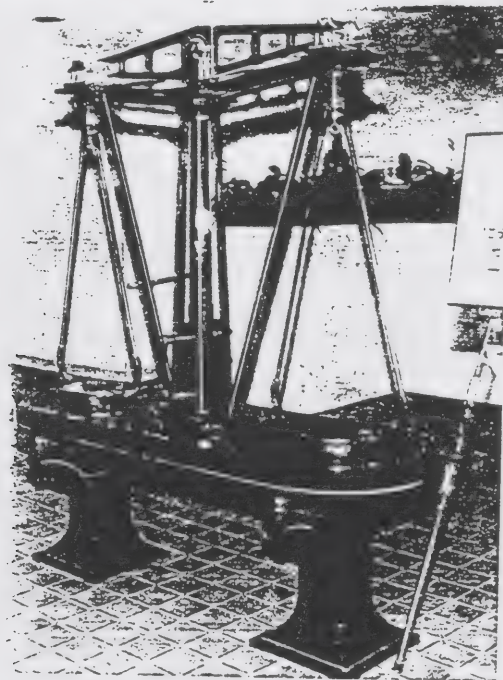


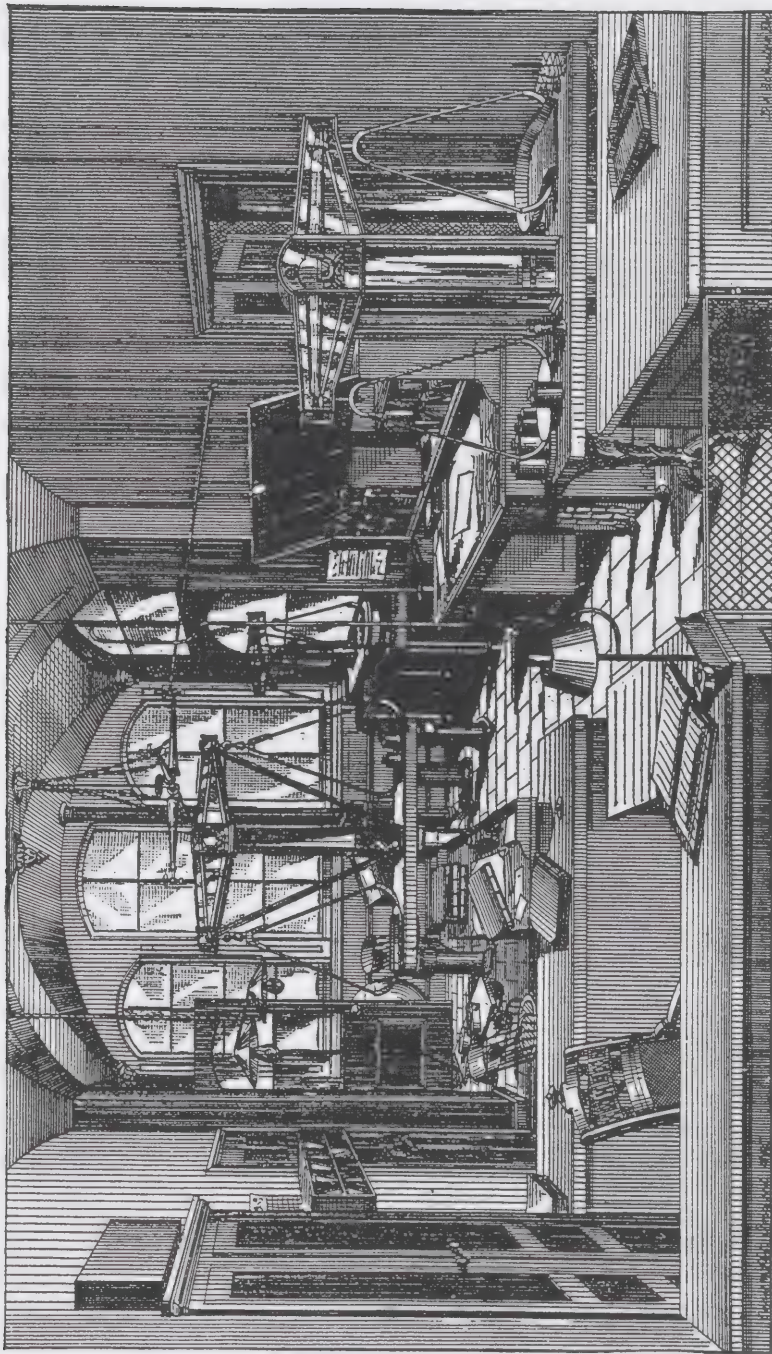
FIG. 2—WEIGHING THE SAMPLES OF COIN.



WEIGHING THE SINGLE PIECES.

EQUAL ARM BALANCE SCALES
AT THE UNITED STATES MINT
WEIGHING A SINGLE COIN USING EQUAL
ARM BALANCE ANALYTICAL BALANCE SCALE





8

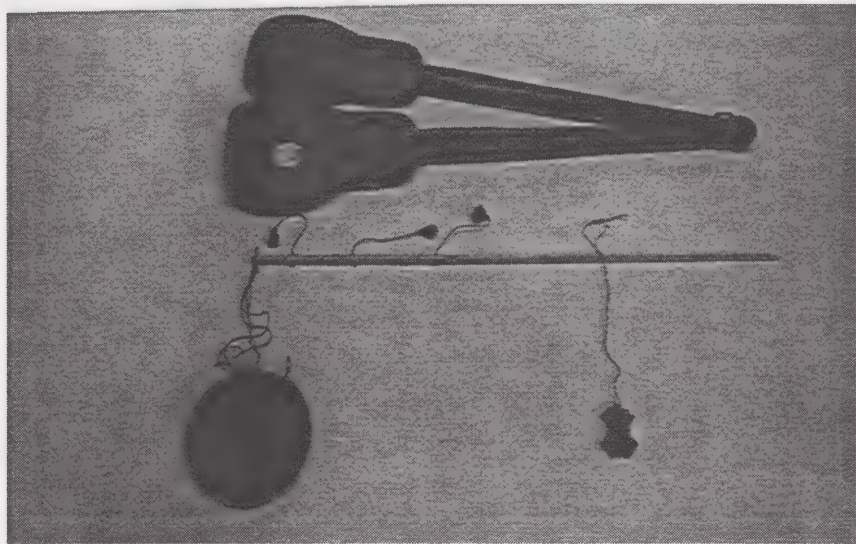
THE DEPOSIT WEIGHING ROOM.

(from A. M. Smith, *Visitor's Guide to U.S. Mint*, 1885)

STEELYARDS:

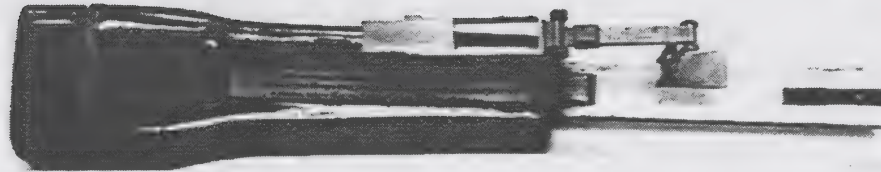
The second type of scale mentioned, is the steelyard. It's invention and use is credited to the Romans who substitute this type of scale for the bismar, which was used in ancient Athens.¹ Steelyards differ from equal arm balance scales in that, first, the steelyard arm is of unequal length. Second, a fixed fulcrum and finally, there is attached to the short arm a pan or a hook by which the item to be weighed is placed. The counterweight or poise is movable and operates on the longer arm. When the counterpoise holds the beam horizontally, the load is balanced and thus equal to the weight indicated by the counterpoise position. (Photograph)

TYPICAL STEELYARD



Photograph showing a typical Chinese steelyard made with an ivory beam, brass pan and brass movable counterpoise which is often incorrectly referred to as an *OPIUM* scale. The division marks on some of the these scales indicate that it they were used to weigh coins of the *Tael* series. The steelyard is not a very accurate weighing device for use with coins. Several examples exist where this method of weighing was successfully used to weigh one or two coins by setting the counterpoise at its exact location on the beam to weigh the coin or else an additional poise would be added at the same poise location to weigh a heavier coin. (Photograph is an example of an English steelyard to weigh guineas and half guineas).

TYPICAL LIMITED USE
ENGLISH COIN STEELYARD

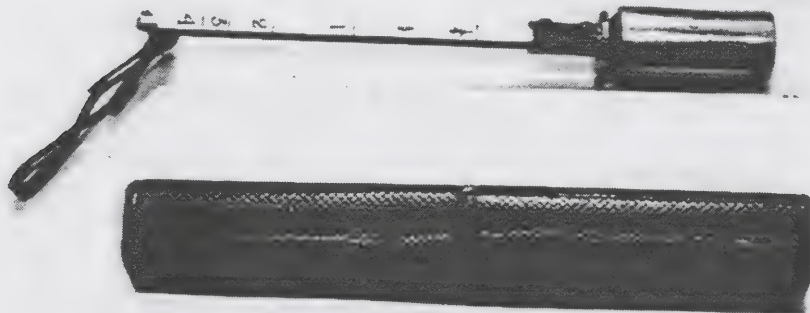


The basic unit will weigh guineas while the throwing forward of the supplemental poise will allow for the weighing of half guineas.

BISMARS

These consist of a beam with a fixed counterpoise at one end, a pan or hook at the opposite end and a movable fulcrum. While there are examples of these instruments being used for weighing coins, they were not generally used as these instruments are not very accurate unless the fulcrum point is indicated for each item to be weighed. (Photograph is of a bismar, made in England and used to weigh letters). The exact location of the fulcrum point is indicated for each half and full ounce weight. No U. S. coin scales or detectors use this principle.

TYPICAL BISMAR SCALE



UNITED STATES PATENTS

SECTION 1

UNITED STATES EQUAL ARM BALANCE SCALES

UNITED STATES: 1797-1858

BENJAMIN DEARBORN

By 1797 Benjamin Dearborn, a former school teacher in Boston, had substantially improved the accuracy of weighing with steelyards which he manufactured and sold in the United States. His "DEARBORN'S PATENT BALANCE" (no patent seems to have been issued) received both Federal and State approvals due to its precision. In 1802 he had developed an equal arm gold scale specially for banks.

In the July 2, 1804 issue of the Boston Gazette, printed by Gilbert & Dean, a balance advertisement of Benjamin appeared in the following form:

Gold Standard Balances for Banks, and Hydrostatic Balances

for detecting Counterfeit Coins, both constructed upon a different application of principles, from any thing of the kind heretofore known, are furnished by D. DEARBORN near the Western end of the Theatre, Boston.

The inclusion of the hydrostatic balance for the detecting of counterfeit coins appears to be the earliest American specific gravity measuring device for determining the density of coins. At that time, it was well known that a gold coin could be weighted in air and then weighed while suspended in water. Then after deducting the tare of the suspension, the specific gravity of the coin was readily calculated from the weight of the water displaced. Whether the coin was counterfeit or not could then be determined if it had insufficient gold content or was plated, hollowed, etc. The same procedure is often used at present. The diameter or thickness of the coin under test would not affect the specific gravity standards.

The Gold Standard Balance could be used for determining the weight of a group of gold coins to check the count or for buying of United States or foreign coins which were substantially worn, clipped, sweated or otherwise abused. Tables could be used to determine the proper weight and gold content of specific United States or foreign gold coins in American circulation.

In 1817 Dearborn published a broadside entitled "Directions for Using Gold Standard Balance Invented by Benjamin Dearborn of Boston, Massachusetts." An example with twin wood columns, 12½ inches high and 6 inches between centers holding up an arched bearing support has on its steel balance beam "DEARBORN'S GOLD BALANCE" on one end and "BOSTON, MASS." on the other end. The instrument has a wooden base with four brass leveling screws, two adjustable beam rest screws and an ivory handle to operate a lifter for the fulcrum bearing. There were two sizes, and each size was made in two styles. Separate weights for United States and foreign gold coins circulating within the United States were furnished along with Troy weights.

DIRECTIONS FOR USING

The Gold Standard Balance,

Invented by BENJAMIN DEARBORN, of Boston, Massachusetts.

(Extensive directions relate to balances in general but portion shown on right is specifically applicable to gold balances.)

Four different denominations of this Balance have been introduced, namely the first or higher style, for weighing gold to the amount of five thousand dollars at a draft. The second style of similar power. The first style for fifteen hundred dollars at a draft, and the second style of similar power; any one of which will weigh a single piece with requisite precision.

Weights for gold are also furnished at the same factory, adjusted to pennyweights and grains, or to dollars and cents of the different gold coin, as estimated by the laws of the United States.

The Gold Standard Balance has now survived the scrutiny of fifteen years, in which time it has been adopted by all the Banks in Boston, and many others in the United States; the Inventor therefore feels himself justified in recommending it to all Banking Institutions wherein superior accuracy is an object of ambition.

BENJAMIN DEARBORN.

Balance-Factory.

Boston, Nov. 1817.

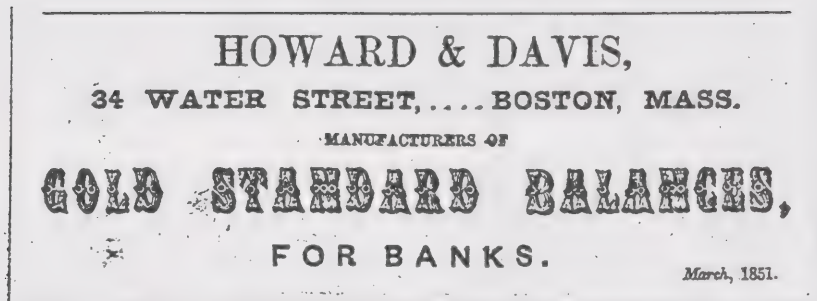


Another similar balance made entirely of metal and produced about 1828 carries on its steel balance beam "B. DEARBORN'S GOLD STANDARD BALANCE" and "BOSTON, MASS."

Producing these balances was continued by Dearborn's successors. Henry Plympton, a clerk for Dearborn since 1821, succeeded to the Dearborn business in 1831. In 1834, Edward Howard (1813-1904) became an apprentice to Plympton as did David Porter Davis. Both Howard and Davis had previously been in an apprenticeship together under Aaron Willard, Jr. in clock manufacture in Roxbury, Mass. By 1840, Howard became independent and was recognized as an expert in balances and won the U.S. Post Office contract to make scales. In 1843, Howard and Davis combined under that name to form a clock manufacturing business and by the next year joined Plympton's brother-in-law, Luther S. Stephenson, in the remaining balance manufacturing business using the name "Stephenson, Howard & Davis." Stephenson withdrew in 1847 and the name "Howard & Davis" was applied to the balance business. Gold scales became under extensive demand by banks and mints in and following 1849 due to the California Gold Rush and were advertised in the "New Varieties of Gold and Silver Coins" (New York, 1851) by Eckfeldt and DuBois, U.S. Mint officials as follows:

UNITED STATES PATENTS

SECTION 1



Howard and Davis made a bullion balance for banks with two rigid supports for each pan. The steel beam was stamped on each arm "HOWARD & DAVIS/BOSTON." The balance was 31 inches high, had a base 37 inches wide and carried 10½ inch diameter pans. Its nine brass weights ranged from ¼ ounce to 4 pounds and are also similarly stamped. It is here illustrated:

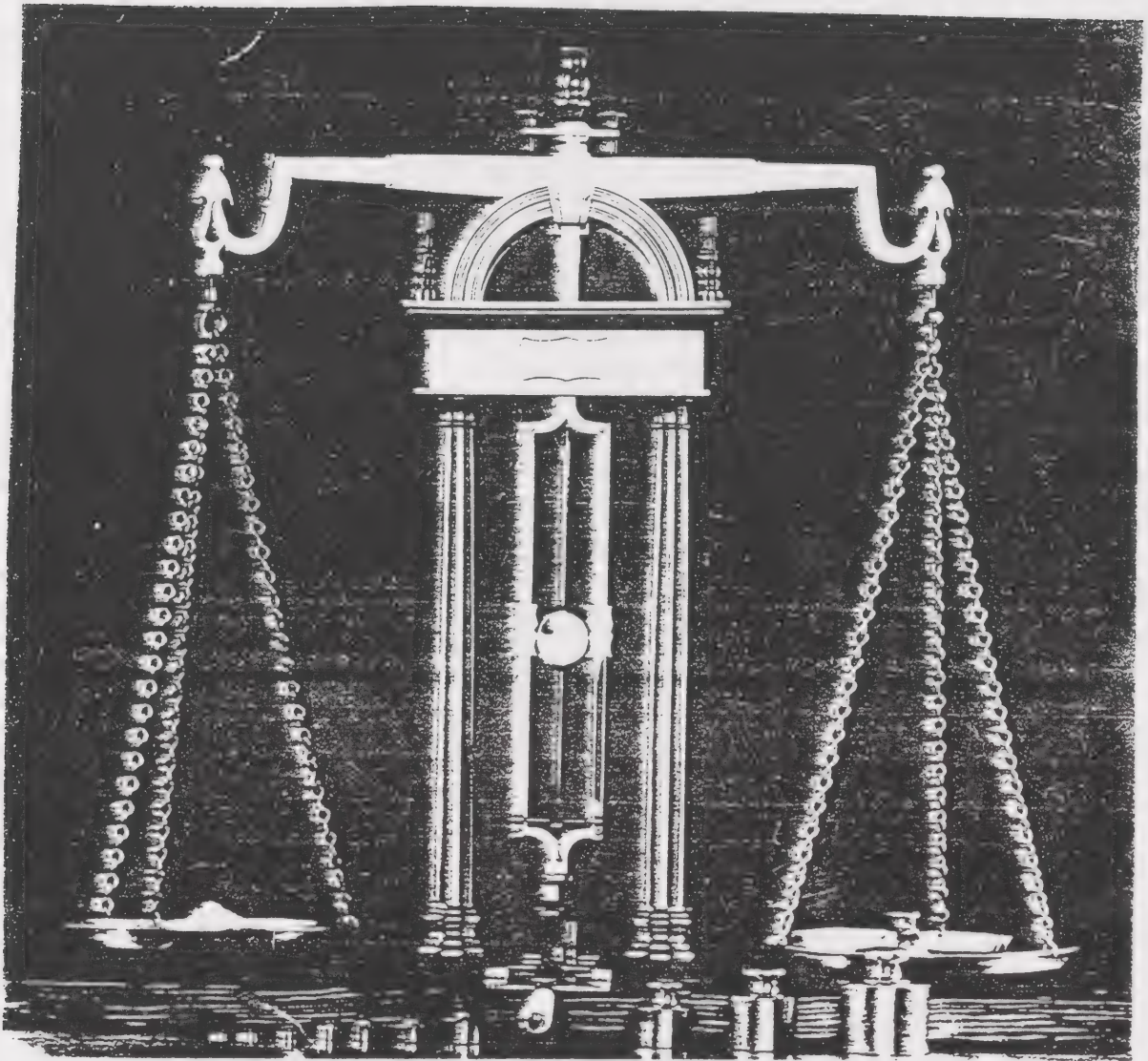


Later Howard & Davis gold balances were 25 inches in height and had 9 inch diameter pans. There was a marble base with four brass leveling screws. A pronged lift operated by an ivory handled lever raised the bearing to contact the knife edge on the beam. Two center columns supported a semi-circular arch below which was a horizontal bar or freze engraved with:

GOLD STANDARD BALANCE
HOWARD & DAVIS
MANUFACTURERS BOSTON MASS
FULL JEWELLED

UNITED STATES PATENTS

SECTION 1



By 1858, Davis dropped out of the business and its name was changed to E. HOWARD & CO. The manufacture of gold scales continued and on the brass freze of a similar balance to those made by HOWARD & DAVIS the engraved legend was changed to read:

U. S. GOLD STANDARD BALANCE
E. HOWARD & CO.
MAKERS BOSTON MASS.

The marble base of the E. Howard & Co. scale is 24 inches by 10 inches, the brass pans are 6 $\frac{3}{4}$ inches in diameter and the height from the top of the base to the top of the urn shaped finial is 19 $\frac{1}{2}$ inches. There are four brass leveling screws for the base and two balance beam rest screws. Two balance beam adjusting screws perfect and protect the precision of the instrument.

UNITED STATES PATENTS

SECTION 1

UNITED STATES EQUAL ARM BALANCE SCALES
FOR USE WITH COINS

In the late 19th century, American inventors had perfected and manufactured scales of remarkable accuracy. Known American coin scale patents are listed below:

SUMMARY OF PATENTS FOR U.S.
EQUAL ARM BALANCE SCALES

(Arranged in Chronological
Order of Patent Date)

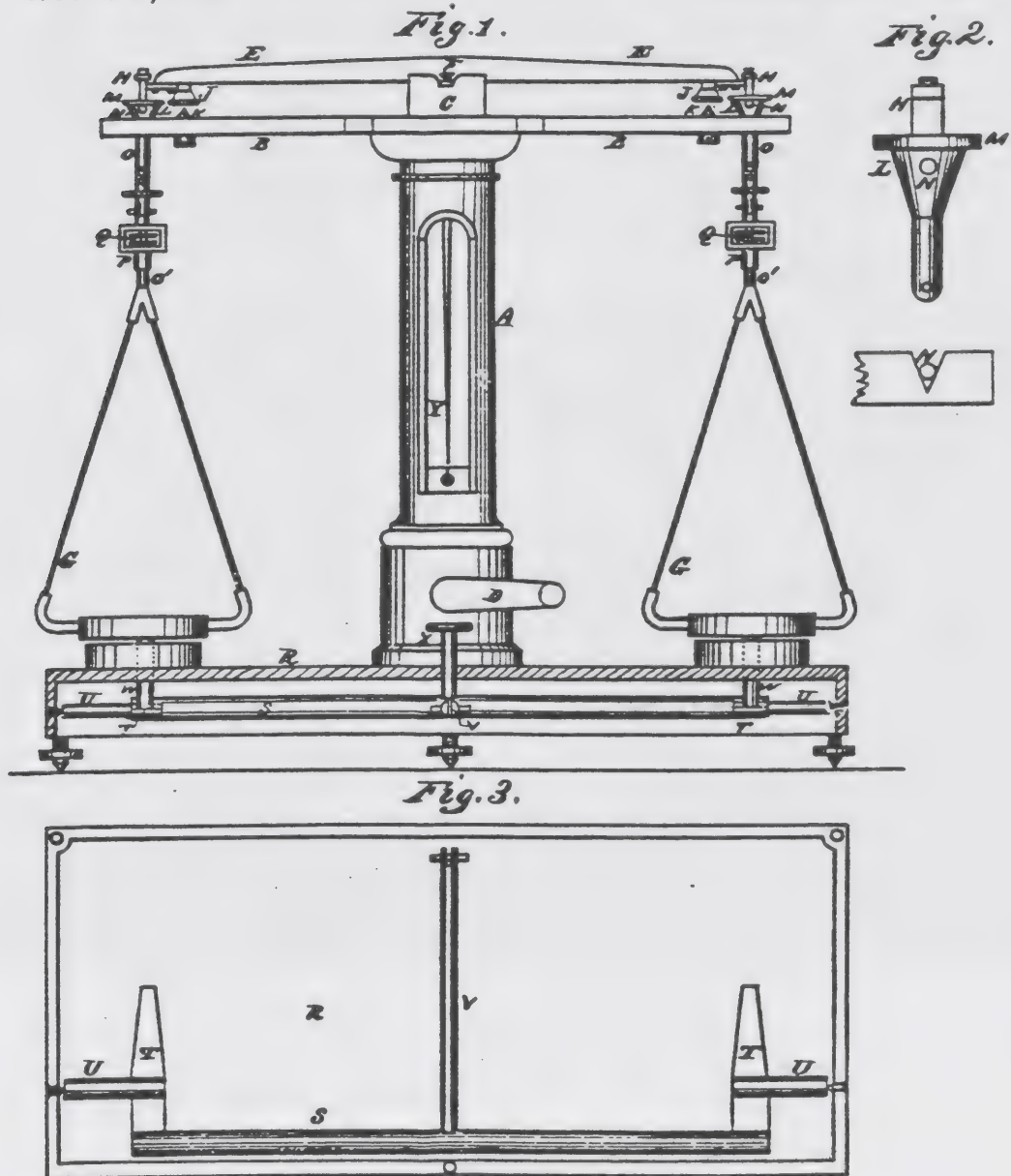
| NO. | TITLE | PATENTEE | PAT. NO. | DATE |
|-----|-----------------------------|---------------|----------|---------------|
| 1. | Scale for Weighing Coins | W. Schmolz | 156,259 | Oct. 27, 1874 |
| 2 | Coin Scales | H. S. Cochran | 161,098 | Mar. 23, 1875 |

The following Patent Office patents for the SCHMOLZ and COCHRAN Equal Arm Balance Scales, were transcribed from copies obtained by the authors from the United States Patent Office. It should be noted that some of the terminology, spelling and word hyphenation is not in accordance with current accepted grammatical usage, but was transcribed exactly as used in the original text.

W. SCHMOLZ.
Scales for Weighing Coins.

No. 156,259.

Patented Oct. 27, 1874.



Witnesses
C. W. Smith
R. Gibson

Inventor
Wm. Schmolz.

UNITED STATES PATENT OFFICE

WILLIAM SCHMOLZ, OF SAN FRANCISCO, CALIFORNIA

IMPROVEMENT IN SCALES FOR WEIGHING COINS

Specifications forming part of Letters Patent No. 156,259, dated
October 27, 1874; application filed August 31, 1874

To all whom it may concern:

Be it known that I, WILLIAM SCHMOLZ, of San Francisco, in the county of San Francisco and State of California, have invented certain new and useful improvements in Scales for weighing Coins; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, and the letters marked there on.

My invention relates to certain improvements on balances which are intended for delicate weighing; and it consists mainly in the use of a novel adjusting arrangement or conical guides, by which I am able to place and keep the bearings of the stirrups in a constant and regular position upon the outside knife edges of a beam. It further consist in the use of a small and fine perpendicular adjustment for raising and lowering the stirrups to set and regulate accurately their lengths by means of two clamp-nuts, as will hereinafter more fully appear.

My invention relates to certain improvements on balances which are intended for delicate weighing; and it consists mainly in the use of a novel adjusting arrangement or conical guides, by which I am able to place and keep the bearings of the stirrups in a constant and regular position upon the outside knife-edges of a beam. It further consists in the use of a small and fine perpendicular adjustment for raising and lowering the stirrups to set and regulate accurately their length by means of two clamp-nuts, as will hereinafter more fully appear.

Referring to the drawings for a more complete explanation of my invention, Figure 1 is a side elevation of my balance with a section of the base. Fig. 2 is an enlarged view of guides L. Fig. 3 is a bottom view of the base, showing the self-acting lever.

A is the central post having the arm or plate D across the top. Through the top of the post the block C moves up and down, being operated by an eccentric from below by means of the crank D. E is the scale-beam, resting upon an agate or steel plate in the center of the movable block C by the knife-edge F. The stirrups G are supported from each end of the scale-beam by small uprights, which are covered with agate or steel plates over the knife-edges.

In order to adjust the saddles H so that they will always have their bearings at an equal distance from the central bearing, they are made with a conical guide, L. Beneath and through this guide, close to the shoulder M a pin, passing transversely An opening is made through the plate B, just beneath these cones, enter the opening, which they fit without any horizontal movement. A transverse slot receives the pin N passes transversely. An opening is made through plate B, just beneath these cones, and when the scale-beam is lowered until the shoulder M rests upon the plate b, these cones enter the opening, which they fit without any horizontal movement. A transverse slot receives the pin N as it descends, and this prevents the dishes from being affected by a horizontal movement in practical use, as by the ordinary construction of scales. The rod O which supports the stirrups is provided with a case or open box at its lower end, and a sleeve P, projects a short distance below this box. The rod O' which suspends the stirrups enters this sleeve, and is provided with double adjusting thumb nuts Q, for the purposes of making the stirrups of the same length by lengthening or shortening the rod within the cylinder or sleeve P. Beneath the platform R of the scale is a bar, S, which has two arms, T T, at right angles with itself from its ends. These bars have arms U midway of their lengths, which serve pivots about which the arms T turn. Another arm, V, projects from the bar S, near its middle, and parallel with the arms T. The free ends of the arms T are beneath the center of the scale pans or dishes, and a pin, W, extends upward from each arm, so as to touch the bottom of the scale-cup when the stirrups are of the same length. From the end of the arm V another pin passes through the bottom of the platform, and terminates in a knob, X, at the front.

The bar S serves as a counterpoise, and keeps the pins W and knob X raised up just strongly enough to cause the pins to follow the scale-cups when they are raised, and retreat with them when they are depressed. The indicator Y extends down within the column, and the back opening of the column is fitted with a ground glass, so that a light can pass through, but objects behind the column cannot be seen, and thus interfere with a delicate observation of the indicator.

The operation of adjusting the bearings is performed by letting the scale-beam down until the cups on the beam and the cones upon the saddle have fitted their corresponding openings. The scale-beam is then raised, and the pins W will follow them up. If the stirrups are not even in length, they can be adjusted by means of the thumb-nuts Q, and by these means the scales can at any time be accurately adjusted.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent is-

1. The cones L and transverse pins N of the saddles, in combination with the openings and the transverse slots in the plate B, as and for the purpose described.

PATENT NO. 156,259 - continued

2. The thumb-screws and nuts Q, for the purpose of raising and lowering the stirrups, as herein described.
3. The counterpoise S, in combination with the arms T T and V, as and for the purpose herein described.
4. The ground glass plate Y of column A, as and for the purpose specified.

In witness thereof I have hereunto set my hand and seal.

WM. SCHMOLZ. [L.S.]

Witnesses:

C. W. M. SMITH

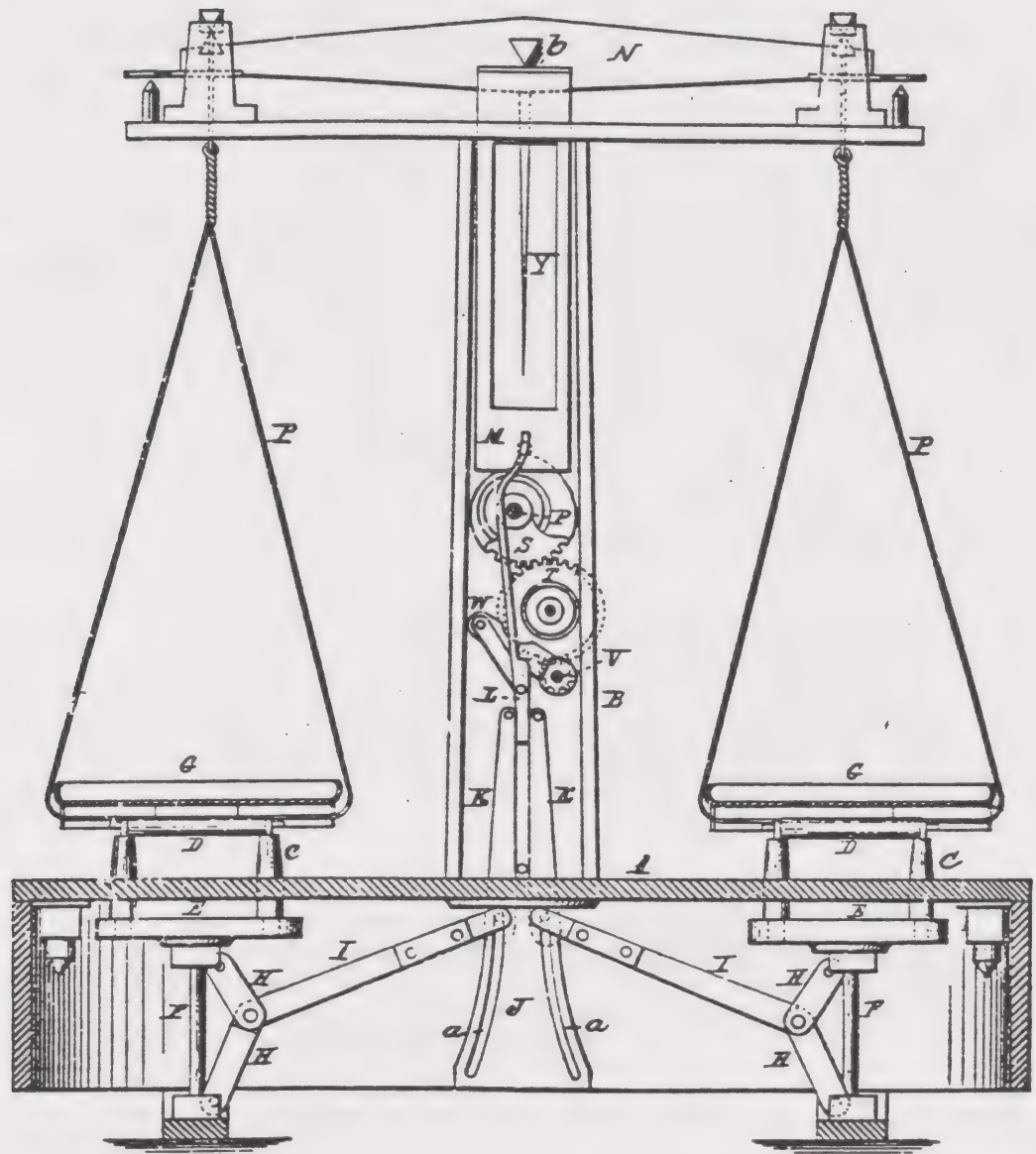
R. GIBBONS

H. S. COCHRAN.
Coin-Scales.

No. 161,098.

Patented March 23, 1875.

Fig. 1.



Witnesses.
J. S. Brown
Geo. W. Cushing Jr

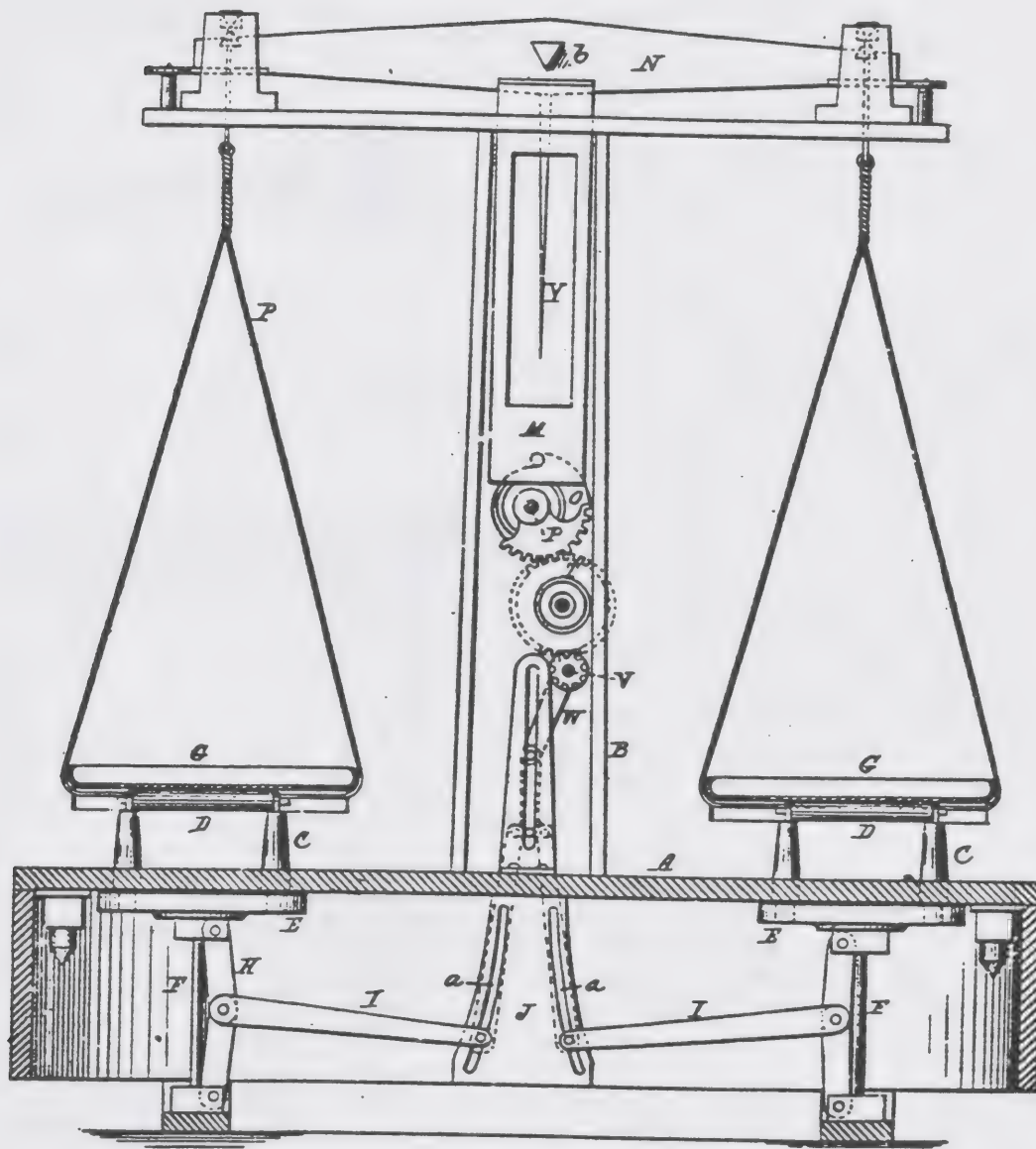
Inventor.
Henry S. Cochran
Per James L. Norris
His atty

H. S. COCHRAN.
Coin-Scales.

No. 161,098.

Patented March 23, 1875.

Fig. 2.



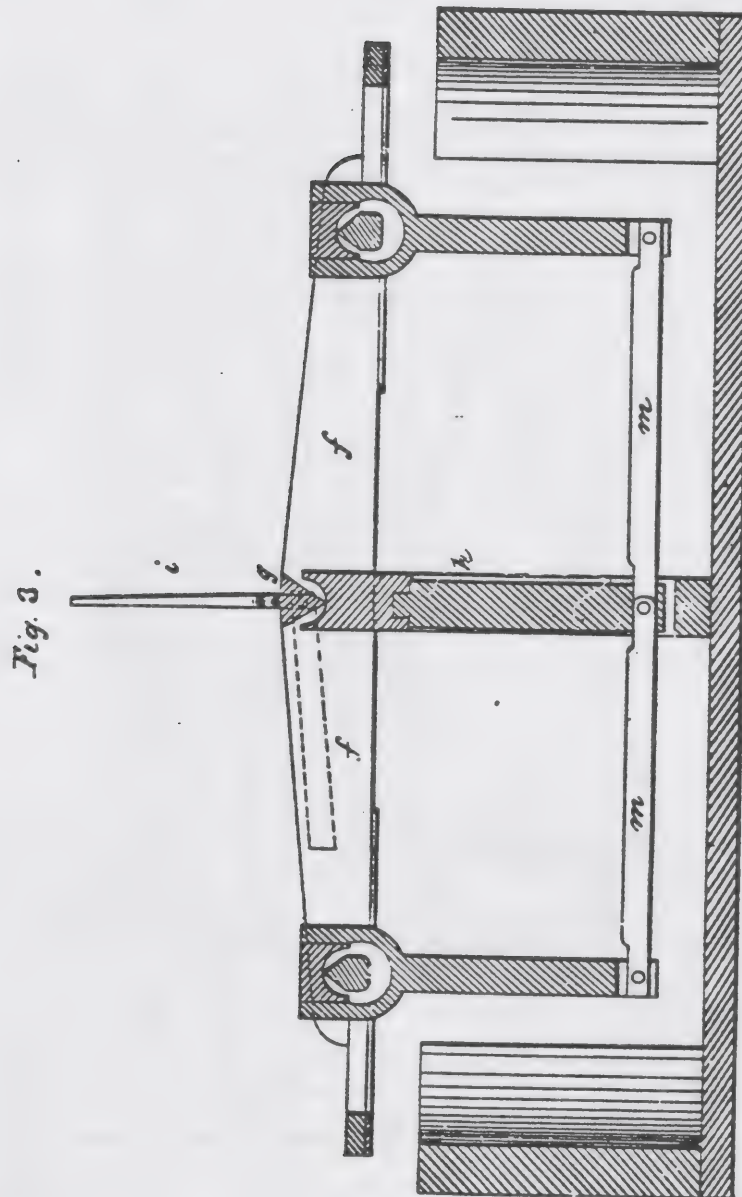
Witnesses.
J. L. Coruby
Geo. W. Cushing Jr

Inventor.
Henry S. Cochran
By James L. Norris,
his atty.

H. S. COCHRAN.
Coin-Scales.

No. 161,098.

Patented March 23, 1875.



Witnesses.
J. L. Dumble
A. L. Norris

Inventor.
Henry S. Cochran
By his atty
James L. Norris.

UNITED STATES PATENT OFFICE

HENRY S. COCHRAN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN COIN-SCALES.

Specification forming part of Letters Patent No. 161,098,
dated March 23, 1875; application filed February 9, 1875.

To all whom it may concern: Be it known that I, HENRY S. COCHRAN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Scales for Weighing Gold, silver, and other material, of which the following is a specification:

The object of the present invention is to provide a weighing apparatus for gold, silver, and other materials, which shall combine two separate and distinct scales of a different construction, one serving as a test-scale for the other, and both entirely independent in their action.

This invention consists, first, in the construction of a vertically movable platform and lever scale, consisting of frames for supporting the pans, a system of toggle-levers, and connected lever-arms, having guides running in curved slots of a pendent plate on the scale-platform, and carrying vertically moveable rods, which are connected with a pointer rod moving over a scale-dial or index, the pointer-rod being connected with a shaft carrying a pinion meshing into a spur-wheel, which serves to lock a cam employed for throwing an independent scale into action, and also to return the lower scale to its normal position. The invention also consists in the employment of a beam-scale resting on a central knife-edge, which scale is held in an inoperative position until the weighing operation has been performed on the lower scale, when, by elevating a moveable post or plunger through the medium of a cam shaft, the knife-edge on the beam is caused to be supported by said post. The pans containing the materials being weighed are elevated from the other scale mechanism, and the latter thrown out of operation, the second weighing then taking place on the beam-scale, which serves as a test-scale to indicate any differences of weight.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of a weighing apparatus, showing the position of the parts when the weighing operation is taking place on the knife-edge or beam-scale. Fig. 2 is a similar view, showing the platform or lever scale in position for weighing. Fig. 3 is a modified form of scale employed instead of a lever-scale shown in Fig. 1.

The letter A designates the platform or base structure of the weighing apparatus, and B is a central vertical column or standard having one or more removable sides to gain access to the interior thereof. Short posts C, operating through the top of the platform, on each side of the center, carry longitudinal rollers D at their upper end, and are connected beneath the platform-top with a board or plate, E, which slides up and down on a sta-

tionary guide stem, F. The frame so formed supports the scale-pan G, which can be readily run on and off from the rollers. Toggle-levers H, connected with the board E and base A, are connected to the lever-frame, which is composed of side arms I and a connecting-bar. To the center of said connecting-bar is secured a plate, which runs in a curved slot, a, made in a centrally-located pendent plate, J, attached to the under side of the platform top. The lever-frames of each scale are connected by means of arms K with a vertically moveable rod, L, which carries or is bent to form a pointer running over a suitable scale-dial or index on the column or standard B. M is a movable post or plunger fitted into the top of the column B, and so arranged that when lowered it is removed from contact with the centrally-fulcrumed scale-beam N. When the plunger is raised through the medium of a cam, O, mounted on a horizontal shaft, P located below the same, the knife-edge b on the beam N is caused to rest upon the top of the plunger, so as to enable the beam to vibrate thereon. The suspension-rods P' applied to the ordinary appendages at the ends of the beam, are not secured to the scale-pan, and are of such a length and shape at their lower ends that they will not interfere with the weighing operations taking place on the lower or lever scale, as shown in Fig. 2. The beam-scale is brought into position for testing the correctness of the lower scale by reweighing the material weighed upon the latter, or in order to indicate any difference in weight by adjusting the plunger through the medium of the cam O. Said cam is locked in position by means of a rack-arm, S, thereon, which meshes into a spur wheel, T, that in turn gears into a pinion, U, on a shaft, V, carrying arm, W, connected with the pointer rod L. Thus it follows that when the plunger M is raised to place the upper or beam scale in operative position, the rack-arm, spur-wheel, and pinion will tend to depress the lower scale mechanism by acting the pointer, connecting arms and lever frames. The scale-pans, which have already been elevated by the suspension-rods, P', are then free to rise and fall. A pointer, Y, projecting downward from the center of the beam serves to indicate the correct weight on a suitable dial.

In Fig. 3 is illustrated a scale to be used instead of the lever-scale, which comprises a frame, f, carrying a central knife-bar, g, and which rocks upon a bed-bar on posts h, and carries a pointer or finger, i. Arms at each end of the scale-frame are connected with a longitudinal centrally-pivoted lever, m.

By placing the upper beam-scale into an inoperative position when the lower scale is being used, the wear and friction upon the knife-edge on the beam is avoided, as the knife-edge is not in contact with anything. It will also be perceived that by combining two distinct scales, in the manner described, an intimate connection of the two is obtained, one being dependent upon the other for securing the desired result, which is a perfect weighing of all material placed upon the scales.

PATENT NO. 161,098 - continued

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is-

1. The combination of the vertically movable scale-pan frames, the toggle-levers, the lever-frames, the vertical arms, and the pointer or finger, substantially as herein described.
2. The combination, in a weighing apparatus, of two independent scales, b, and mechanism, substantially as described, for simultaneously throwing one scale into an operative position and the other out of action, substantially as described, for the object stated.
3. The combination of the scale-beam, its knife-edge, the vertically movable plunger or post, and suitable lifting mechanism therefor, with the suspension-rods and scale pans, substantially as herein set forth.
4. The combination of the lifting-cam, rack-arm, spur-wheel, and pinion with the movable plunger and the duplex scale mechanism, substantially as herein described.

In testimony that I claim the foregoing I have hereunto set my hand.

HENRY S. COCHRAN.

Witnesses:

Geo. W. CUSHING, Jr.

A. H. NORRIS.

CHAPTER II

UNITED STATES PATENTS

SECTION 2

UNITED STATES MECHANICAL COUNTERFEIT COIN DETECTORS

There is considerable confusion existing in the minds of those who issued these patents in the past years, what was or what was not a proper mechanical counterfeit coin detecting mechanism. It is not unusual to find that sometimes these devices are recorded as *Counterfeit Coin Detectors* while others may have been recorded as *Scales* or *Coin Tester* or any other number of designations. Also, some patents were issued for *Designs* while others were issued for *Utility* subjects⁽⁹⁾. Even such exotic references as *Force Measuring*, *Chemistry*, *Electrical* and *Wave Energy* and *Controlled Apparatus* sub classifications were found to contain coin scales and counterfeit coin detecting mechanisms. According to the Patent Office there are 300 plus main groupings, called "classes," and each class has many sub classes. Currently, there are over 112,000 subclasses in which any item maybe classified. To complicate research, there is a "Design Patent Classification" (patent for ornamental designs) that has 73 main classes and each of these classes has many subclasses. Researching patent papers is a very difficult task at best without the difficulties caused by this "Hodge Podge" system.

Most of the counterfeit coin detecting mechanisms patented in the United States are of the so-called rocker type. Simply put, this device has a series of one or more slots or pans to receive the coin on one arm of the device that is balanced against a counterpoise placed on the end of the other arm. Essentially these devices are steelyards with a fixed fulcrum, a fixed location for the load to be applied and a counterpoise. The counterpoise is fixed on one arm to weigh a specific coin placed at a specific location on the other arm. As has been stated in Chapter 1, a counterfeit coin detector must do three things in order to qualify as a true detector.

1. It must weigh the coin just as any scale must.
2. It must be able to check the diameter of the coin.
3. It must be able to check the thickness of the coin.

For purposes of review, it must be noted that all base metals have a lower specific gravity; e.g., weigh less per unit of volume than gold. The same is true of silver, with the exception of lead which has a higher weight per unit volume than silver. In the case of lead being used in a coin, the "ring" or "timbre," when the coin is hit or tapped, usually reveals it as counterfeit and no further testing would be required. Thus

for all practical purposes, a counterfeit coin, in weighing the same as proper coin, would have to have either a larger diameter or a be thicker. The slots and the pans of the counterfeit coin detectors are made specifically to exclude any oversized coins. The length of the slots or the diameter of the pans, as the case may be, would exclude any coin that was of a greater diameter than the genuine coin. This is the only basis on which a counterfeit coin detecting mechanism works.

Compounding the problem of listing the known United States patented counterfeit coin detecting mechanisms, there are in existence several such mechanisms for which there are no patent papers nor for that matter any record of these ever having attempted patenting. It may well be, that at some future date somebody may stumble across these patents records in some unlikely category that has escaped the authors' attention.

It is hoped that the following listing of the patented counterfeit coin detecting mechanisms is complete. Time and research by others interested in the subject may bring forth additional data on the missing patents or perhaps disclose new patents. The following is a summary of the presently known mechanical counterfeit coin detecting with drawings of the devices and their patent papers.

SUMMARY OF PATENTS FOR MECHANICAL
COUNTERFEIT COIN DETECTORS
(Arranged in Chronological Order of Patent Date)

| NO. | TITLE | PATENTEE | PAT. NO. | DATE |
|-----|-----------------------------------|----------------|----------|---------------|
| 1 | Coin Scale & Detector | H. G. Robinson | 9,844 | July 12, 1853 |
| 2 | Coin Tester | G. B. Smith | 9,997 | Sept. 6, 1853 |
| 3 | Coin Tester | J. Allender | 13,840 | Nov. 27, 1855 |
| 4 | Coin Tester | H. Maranville | 16,390 | Jan. 13, 1857 |
| 5 | Counterfeit Coin Detector | F. J. Herper | 18,973 | Dec. 29, 1857 |
| 6 | Coin Detector | H. Maranville | 27,140 | Feb. 14, 1860 |
| 7 | Counterfeit Coin Detector | W. Painter | 35,834 | July 8, 1862 |
| 8 | Detector of Counter- feit Coin | J. A. Thompson | 187,936 | Feb. 27, 1877 |
| 9 | Counterfeit Coin Detector | J. Wiarda | 188,712 | Mar. 20, 1877 |

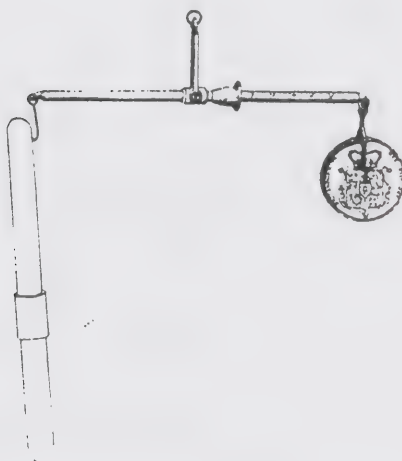
SUMMARY OF PATENTS FOR MECHANICAL
COUNTERFEIT COIN DETECTORS
(Arranged in Chronological Order of Patent Date)

| NO. | TITLE | PATENTEE | PAT. NO. | DATE |
|-----|--|---------------------------------|-----------|----------------|
| 10 | Counterfeit Coin Detector | J. W. Sutton | 188,892 | Mar. 27, 1877 |
| 11 | Counterfeit Coin Detector | J. A. Thompson | 189,284 | April 3, 1877 |
| 12 | Coin Detector | P. Doherty | 192,241 | June 18, 1877 |
| 13 | Counterfeit Coin Detector | E. Kronenberg | 194,451 | Sept. 25, 1877 |
| 14 | Counterfeit Coin Detector | W. H. Rice | 196,168 | Oct. 16, 1877 |
| 15 | Device For Receiving Coin and Detecting Counterfeit coin | J. W. Meaker | 200,080 | Feb. 5, 1877 |
| 16 | Counterfeit Coin Detector and Coin Receiver | S. A. Field | 203,719 | May 14, 1878 |
| 17 | Counterfeit Coin Detector | E. Street | 209,145 | Oct. 22, 1878 |
| 18 | Counterfeit Coin Detector | J. A. Thompson | 224,807 | Feb. 24, 1880 |
| 19 | Scales | J. T. McNally W. H. Harrison | D12,795 | Feb. 28, 1882 |
| 20 | Counterfeit Coin Detector | J. B. Atwater | 264,431 | Sept. 19, 1882 |
| 21 | Coin Tester | M. Clarke | 273,667 | Mar. 6, 1883 |
| 22 | Coin Detector | T. I. Porter | 645,185 | Mar. 13, 1900 |
| 23 | Coin Testing Machine | M. D. Sadtler | 867,304 | Oct. 1, 1907 |
| 24 | Spurious Coin Detector | L. Bragin | 1,531,642 | July 6, 1925 |

As noted in Chapter I, the first patent for a mechanical counterfeit coin detector was issued to H. G. Robinson, of Schuylkill Haven, Pennsylvania, on July 12, 1853. The similarity of the Robinson patent to that of English inventor, G. Riddle Registered design No. 1312, dated June 17, 1842 is evident when one compares the two designs. The Robinson design was an improvement over the Riddle design by incorporating the ability to check coin thickness and diameter which the Riddle design did not do.

OFFICE OF REGISTRY OF DESIGNS
DESIGN COPYRIGHT NO. 1312 FOR
PORTABLE MONEY BALANCE
Registered by G. Riddle, 172 Blackfriars Road
London, 17th June, 1842.
(From the Mallis collection)

No 1312
Portable Money Balance
Registered by G. Riddle
172 Blackfriars Road, London
17th June 1842.



| | |
|--|---------|
| BT 42/6 | BC 1452 |
| COPYRIGHT - NOT TO BE REPRODUCED PHOTOGRAPHICALLY WITHOUT PERMISSION | |

Office of Registry of Designs,
Wellington Street North, Strand.
London, June 17, 1842

I HEREBY CERTIFY that Design No. 1312
of which this is a copy was
registered this seventeenth day of June 1842
at the hour of half past two in the afternoon
for G. Riddle of
172 Blackfriars Road London Proprietor
thereof, in pursuance of the Designs Copyright Act, 2 Vic. c. 17.

G. Riddle
Registration secured
by Alfred Charles Johnston

H. G. Robinson.

Balance Scales.

N^o 9,844.

Patented Jul. 12, 1853.

Fig. 1.



Fig. 2.

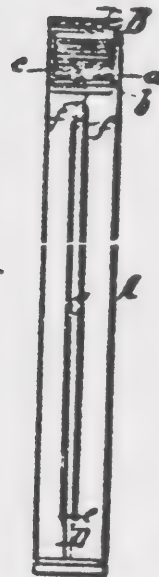


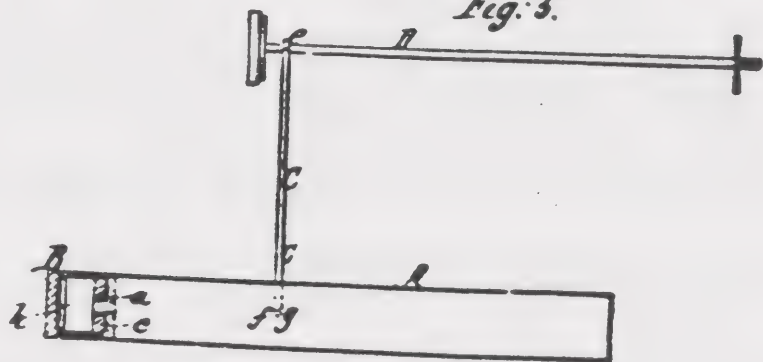
Fig. 3.



Fig. 4.



Fig. 5.



UNITED STATES PATENT OFFICE

H. G. ROBINSON, OF SCHUYKILL HAVEN, PENNSYLVANIA

COIN SAFE AND DETECTOR

Specification of Letters Patent No. 9,844, dated July 12, 1853

To all whom it may concern:

Be it know that I, HENRY G. ROBINSON, of Schuykill Haven, in the county of Schuykill and State of Pennsylvania, have invented a new and useful Implement for Detecting Counterfeit Coin, said implement also serving as a portable receptacle for money, both coin and bank notes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which-

Figure 1 is an external view of the implement, represented as closed. Fig. 2, is a longitudinal vertical section of ditto, taken through the center. Fig. 3, is a detached perspective view of the gage and coin receptacle. Fig. 4, is a detached view of the clamps. Fig. 5, is a longitudinal vertical section of the case; the clamps being withdrawn, and applied to the case, for the purpose of weighing the coin, in the receptacle at one end of the case.

Similar letter of reference indicate corresponding parts, in each of the several figures.

The implement consists of a cylindrical case, having, at one end, a gage and receptacle box for coin, which will be hereafter described; the remaining portion of the case encloses a pair of clamps, by which the case is suspended, in order to detect a counterfeit coin by weight. The portion of the case which includes the clamps may also contain bank notes. The implement, therefore, may be used, not only as a detector for counterfeit coin, but may also be carried in lieu of an ordinary wallet or pocket-book.

The general construction and arrangement of the several parts of the implement constitute the invention.

A, represents a cylindrical case or tube, having, at one end, a receptacle or gage box, B; Fig. 2, 3, and 5. This box, B, is also cylindrical, and fits within the case, A, and is secured there by a screw, (a), attached to a partition of (b), which screw passes into a female screw, (c), in the bottom of the box, B; Fig. 2, 3, and 5. The receptacle or gage box, B, may be sufficiently large or deep to contain several pieces of coin. At the upper or outer end of the box, B, there is a recess, (d), cut through and around one half the circumference of the box: this recess will consequently admit a coin to be passed through it, as large as the box will contain. The width of the recess must equal the width of a genuine coin of such a size as the box is capable of holding. The remaining portion of the case, A, incloses a pair of clamps, C. These clamps are attached, at one end, to a rod

PATENT NO. 9,844 - continued

D, by a pivot, (e). The opposite ends of the clamps are provided with points, (f), (f), see Fig. 4, the use of which will be presently shown. The rod, D, has a screw-thread cut upon it, at one end, which screw-thread passes into the center of the screw, (a), as the rod, D, is turned, and the and clamps are thereby secured within the case, A.

In order to detect counterfeit coin, the gage box, B, is withdrawn from the case, A. If the coin will pass snugly through the recess, (d), into the box, it must of course be of the same dimensions as a genuine coin; and, if a counterfeit, it will be lighter. The clamps, C, are then withdrawn from the case, A; and the small points, (f), (f), are inserted in fulcrum holes, (g), (g), one on each side of the case, seen in Fig. 1. These fulcrum holes are placed at certain points in the case, so that when a genuine coin is in the box, B, and the box adjusted within the case, A, the case, A, will exactly balance or be in equilibrium, when the case is suspended at the fulcrum holes, see Fig. 5; the coin being represented by (h). If a counterfeit coin be of the same weight as a genuine one, it will necessarily be larger, and will not pass through the recess into the box, B. Weighing, in this case, would be unnecessary.

If the receptacle or gage box, B, contains several coins, they must all be removed when a coin is to be tested by weighing; and the coin to be tested should be moistened with spittle, to cause it to adhere to the end of the box, as shown in Fig. 5, as a change of position of the coin would cause great inaccuracy in weight.

Bank notes may be wound around the rod, D, and clamps, C, within the case; and the implement will thus form a convenient receptacle for both coin and bank notes, equally portable as the ordinary wallet or pocketbook.

I do not claim detecting counterfeit coin by means of gage and scale, for this is well known, but, What I claim as new, is,—

The peculiar construction of the implement, and the manner in which the several parts are arranged: by which construction and arrangement, I combine a portable receptacle for both coin and bank notes, convenient for the pocket, and a counterfeit coin detector, the implement being formed of a cylindrical case, A, having a gage box or receptacle, B, at one end; and the remaining portion of the case inclosing the clamps, C, for the purpose as shown, and otherwise constructed, and arranged, substantially as set forth, in the body of the specifications.

HENRY G. ROBINSON.

Witnesses:

Wm. CHALMERS,
S. C. STANTON.

G. B. SMITH.

Coin Tester.

No. 9,997.

Patented Sept. 6, 1853.

Fig. 1.

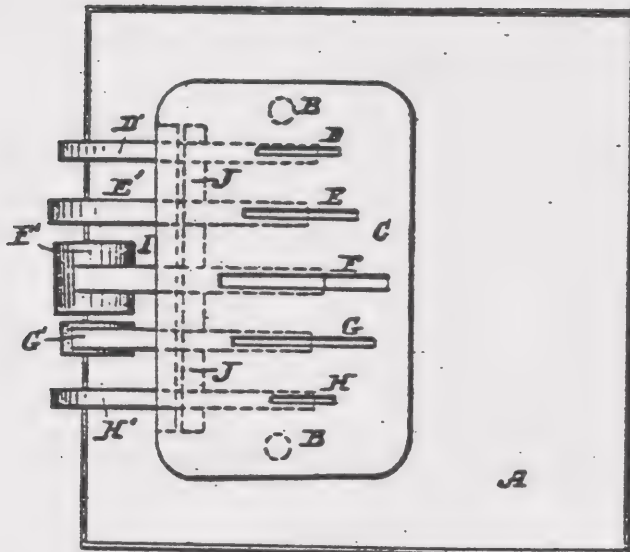
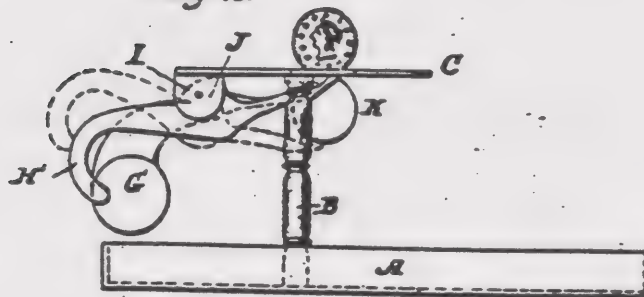


Fig. 2.



UNITED STATES PATENT OFFICE
GIDEON B. SMITH, OF BALTIMORE, MARYLAND
COUNTERFEIT-COIN DETECTOR

Specification of Letters Patent No. 9997, dated September 6, 1853

To all whom it may concern:

Be it known that I, Gideon B. Smith, of the city of Baltimore, in the State of Maryland, have invented a new and useful apparatus for Proving Genuine Gold Coin and Detecting Spurious Coin and for Such other Purposes as It may be Adopted: and I do hereby declare that the same is described and represented in the following specifications and drawings.

The nature of my invention consists in a gage or hole just large enough to permit the genuine coin to pass through arranged in combination with a lever acting below said gage, balanced so that the weight of such coin will depress it so as to said coin slip down through said gage which is too small to allow any spurious coin to pass which is larger than the genuine; the lever being so balanced that any coin lighter than the genuine will not be heavy enough to depress it so that all spurious coin whether too large or too light will stop in the gage, while the genuine will slip through and fall out below.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation referring to the drawings above mentioned in which the same letters indicate like parts in each of the figures.

Figure 1 is a plan, and Fig. 2, an elevation.

A is the base in which the two posts B B are fastened which support the gage plate C fastened to the top of said posts and provided with five slots adopted to five American gold coins as follows: D to and one half dolls., E to five dolls., F to twenty dolls., G to ten dolls, and H to one dollar piece. These slots are just large enough to permit the genuine coins of the respective denominations slip through freely onto the levers D', E', F', G' and H' arranged to vibrate under each of the slots or gages respectively, as they are depressed by the coins put into the gages: and the rear ends of each of these levers which project out behind the gage plate C and made so heavy that anything lighter than the genuine coin which may be put into the gages will not be heavy enough to depress the ends under the gages; consequently all spurious coins which are larger than the genuine will be detected by the gages, and all such coins as are lighter than the genuine will be detected by the levers, if they are small enough to slip through the gages; while the genuine coin will slip freely through the gages and depress the levers so as to fall off and allow the levers to return to their places. These levers all vibrate on the rod I which passes through them and

PATENT NO. 9,997 - continued

through a series of projections J J, &c., on the under side of the gage plate provided for that purpose. The rod I, projections J J, ends of levers which are under the gage plate and the position of the posts B B are all represented by dotted lines in Fig. 1.

In Fig. 2, a one dollar gold coin is represented as being put into the slot II through which it passes to the position represented by the circle K depressing lever K' to the position represented by the dotted lines, when the gages no longer support the coin and it falls off of the lever, so that it resumes its place against the gage plate, ready to receive another coin.

I contemplate that a gage plate with one or more levers may be fixed in the top of a counter over a drawer or other receptacle for money: also that an inclined plane may be arranged below the levers on which the money may slide after it falls off of the levers to its desired destination, also that one or more gages with a lever or levers may be arranged in porte-monnaie or articles for carrying money in the pocket.

What I claim for my invention and desire to secure by Letters Patent is-

A gage or hole large enough to permit the genuine coin to pass through; arranged in combination with a lever acting below said gage, balanced so that the weight of such coin will depress it so as to let said coin slip down through said gage which is too small to allow any spurious coin to pass which is larger than genuine; the lever being so balanced that any coin lighter than the genuine will not be heavy enough to depress it; so that all spurious coin whether too large or too light will stop in the gage while the genuine will slip through and fall out below substantially as described.

GIDEON B. SMITH.

Witnesses:

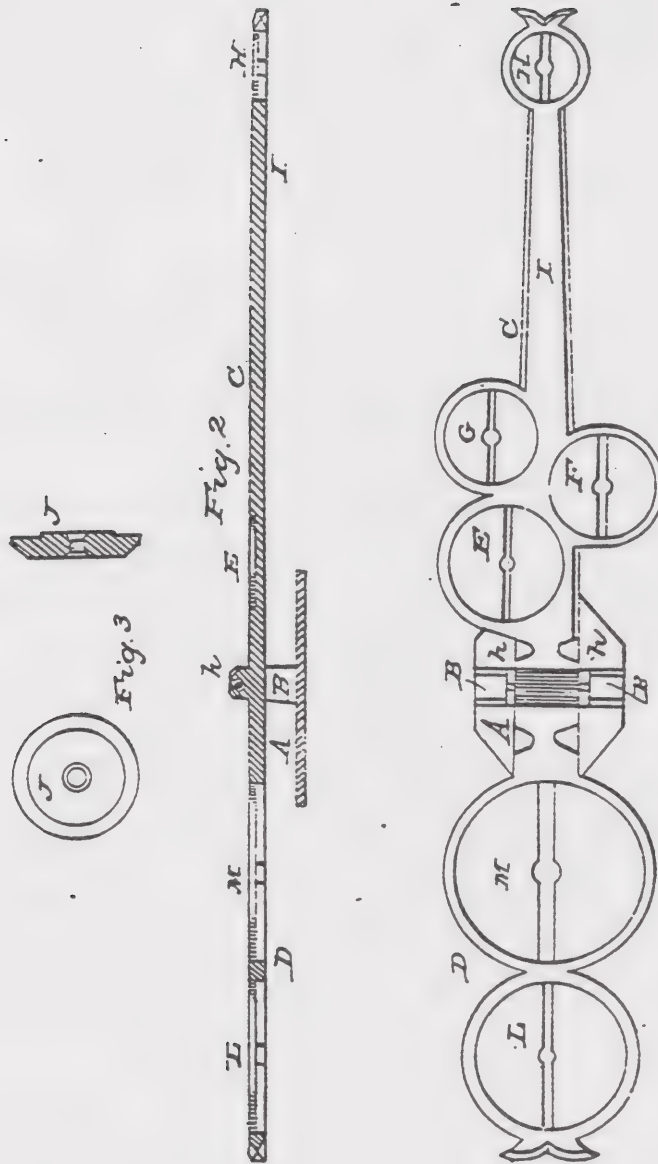
B. T. F. Dulany
Edwd. G. Starr.

J. ALLENDER.

Coin Tester.

No. 13,840.

Patented Nov. 27, 1855.



UNITED STATES PATENT OFFICE

JOHN ALLENDER, OF NEW LONDON, CONNECTICUT.

BALANCE FOR DETECTING SPURIOUS COIN.

Specification of Letters Patent No. 13,840, dated November 27, 1855.

To all whom it may concern:

Be it known that I, JOHN ALLENDER of New London, in the county of New London and State of Connecticut, have invented a new and useful Apparatus for Proving Genuine and Detecting Spurious Coin; and I do hereby declare that the same is described and represented in the following specification and drawings. To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation, referring to the drawings in which the same letters indicate like parts in each of the figures. Figure 1, is a plan. Fig 2, a section of Fig. 1, cut through the center. Fig. 3, a plan and section of the weight. The nature of my invention consists in a lever of a proper size and weight, with a fulcrum a proper distance from its center, which lever is provided with cavities in each arm of proper size to receive the genuine coin arranged at such distance each side of the fulcrum as to weigh the smaller coins upon the lighter arm without additional weight, and the heavier coins two or more on the heavy arm with one weight, in one position, on the lighter arm.

In the accompanying drawings A is the base of a stand provided with two pillars B, B, which are perforated to receive the pivots h, h, of the weighing lever C, which may be made in the form represented or such other form as may be desirable, the short arm D, being made of sufficient weight to weigh a five dollar gold piece if it is placed in the cavity or countersink E which is made just large enough to receive the genuine coin, or the three dollar gold piece in the cavity F, or the two and one half dollar gold piece in the cavity G, or the one dollar gold piece in the cavity H, all of which cavities are all made just large enough to receive the genuine coin and it is weighed without additional weight on the heavier arm. The weight J is made in the form represented and provided with a projection K fitted to the cavity H, and when placed in said cavity the lever C will weigh a ten dollar gold piece in the cavity L or a twenty dollar gold piece in the cavity M, each of which cavities are made just large enough to receive the genuine gold coins of the denomination named, and both of them are in the short and heavy arm of the lever C. There is a slot directly across the center of each of the cavities in which the coin is weighed just large enough to let the genuine coin pass through freely by its own weight so as to prove the coin by its size as well as its weight.

This apparatus can be made and sold cheaper than any other that will perform the same service with the same facility, and will be found a perfect protection to prove genuine and detect spurious coins which are either larger or lighter than the genuine. I am aware that balances for proving coin

Patent No. 13,840 - continued

have been made with two levers hung upon one fulcrum so arranged as to weigh all the coins upon one side of the said fulcrum and when the larger coins were weighed the lever in which the small ones are weighed is turned to the opposite side of the fulcrum. Therefore I make no claim to instruments constructed with more than one lever and to weigh upon one side of the fulcrum only, but-

What I do claim as my invention and desire to secure by Letters Patent is-

A single lever of such a size and weight and provided with cavities or countersinks arranged at such distances each side of the fulcrum, as to weigh the smaller coins upon the lightest arm, without additional weight, and the larger coins two or more on the heaviest arm with one weight, in one position on the lighter arm.

JOHN ALLENDER

Witnesses:

C. PRINCE,

G. C. STILLMAN.

AUTHORS' COMMENTS ON ALLENDER PATENT

It should be noted that while Allender's patent indicates the mechanism is to be used with the six, then current gold coins, namely, the twenty, ten, five, three, two and one half and one dollar denominations, there are in existence four distinct models in seven varieties. The first model, marked *WARRANTED* and the second marked *PATENT PENDING* do not have a place for the three dollar gold coin which was authorized by Congress on February 21, 1853 and first struck in 1854. The original model including a space for the three dollar gold piece was marked *PATENT PENDING*. The patented model, which has the place for the three dollar gold coin, is of course the 1855 issue. For the mechanisms without the three dollar space, an insert was provided that fitted into the five dollar pan and which could be used to weigh and gauge the three dollar gold piece. The story behind the pertanent pending and the patented models can best be followed by the letters between John Allender and the Patent Office beginning with a letter from the Patent Office to James Snowden, These letters are part of Chapter IV, Section 1 along with a description of the varieties of Allender detectors.

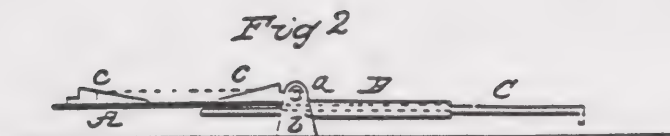
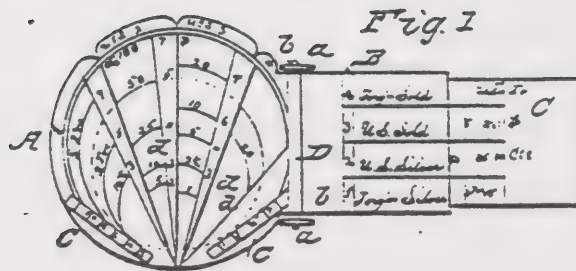
(For more see IV-1-1)

H. MARANVILLE.

Coin Tester.

No. 16,390.

Patented Jan. 13, 1857.



[II-2A-1]

H. PETER, PHOTO-LITHOGRAPHER, NEW YORK, N. Y.

CHAPTER II
UNITED STATES PATENTS

SECTION 2A

UNITED STATES PATENT OFFICE

H. MARANVILLE, OF CLINTON, OHIO

BALANCE FOR DETECTING COUNTERFEIT COINS

Specification of Letter Patent No. 16,390, dated January 13, 1857.
To all whom it may concern:

Be it known that I, H. Maranville, of Clinton, in the county of Summit and State of Ohio, have invented a new and Improved Implement or Device for Detecting Counterfeit Coins; and I do hereby declare that the following is a full, clear and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which-

Figure 1 is a face view of my improvement. Fig. 2 is a side view of ditto.

Similar letters of reference indicate corresponding parts in the two figures.

My invention consists in the employment or use of a graduated disk and slide, connected together and hung upon centers, so as to form a scale beam. The disk has guides attached to its face and the several parts are so arranged that the cam may be weighed and also measured both in regards thickness and diameter, and the implement may be made quite portable so that it may be carried in the pocket with as little inconvenience as an ordinary pocket knife or comb.

To enable those skilled in the art to fully understand and construct my invention. I will proceed to describe it.

A represents a disk or circular plate, to one side of which a projecting plate B is attached. The sides or edges of the plate B are bent downward and underneath the other portion to form guides to receive a sliding plate which is allowed to work freely in said guides underneath the disk A and plate B. The disk A and plate B may be formed of sheet brass or other metal and both cut out of one piece. The disk A need not exceed in diameter a silver dollar. The slide C is also formed of a piece of sheet metal. On the plate B at its junction with the disk A, a bar D is secured transversely, and knife edges journals (a) are formed one on each side of said bar. These journals (a) have their bearings in ears or lugs (b) turned up at the end of a bar underneath the plate B. On the face of the disk A there are secured two ledges (c) (c). These ledges are placed in oblique positions near

PATENT NO. 16,390 - continued

the edge of the disk and form guides against which the edge of the coin to be tested is placed. The disk A has its face graduated as shown in Fig. 1- curved lines being made indicating the diameter of gold and silver coins of different denominations. The different scales are divided by lines (d).

The slide C is divided longitudinally into four parts, each part being graduated, one part for silver and another for gold, a part for foreign silver and the other part for foreign gold. The dish and slide are balanced like a scale beam in the bearings in lugs (b) and the weight of the coin on disk A is counterbalanced by adjusting slide C.

The implement is used as follows: Take, for instance, a silver dime, and place it upon the disk A, the edge of the dime being placed against the ledges (c) (c). Then adjust the slide C. so that the line marked 10 in the part marked "cts.," on the slide will be even with the outer edge of the plate of the plate B. If the coin be genuine its edge will be precisely over the line marked 10 in the disk, and the disk and slide will be evenly balanced.

The thickness of the coin is indicated by figures on the ledges (c), the ledges being of taper or inclined form. It will be seen that by the above implement the coins are weighed and measured, and therefore counterfeit coin may be readily detected. If a spurious coin is of the same weight as a genuine one it must be larger, because any known metal heavier than gold is more valuable and consequently would not be used in combination with other metals for counterfeiting. If a spurious coin is equal in size to a genuine one it will, of course, be of less weight.

The implement is exceedingly simple in construction and may be made quite portable, not exceeding 3 or 4 inches in length. Having thus described my invention, what I claim as new and desire to secure by Letters Patent is-

The graduated disk A and slide C connected as shown and hung in ears or lugs (b), the disk having edges or guides (c) (c) attached to its face and the whole arranged as herein shown and described, for the purpose set forth.

H. MARANVILLE

Witnesses:

J. F. Gilbert,
I. I. Wright

AUTHORS' COMMENT

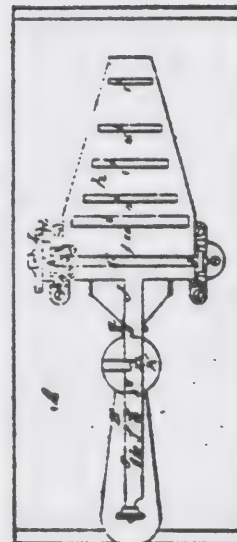
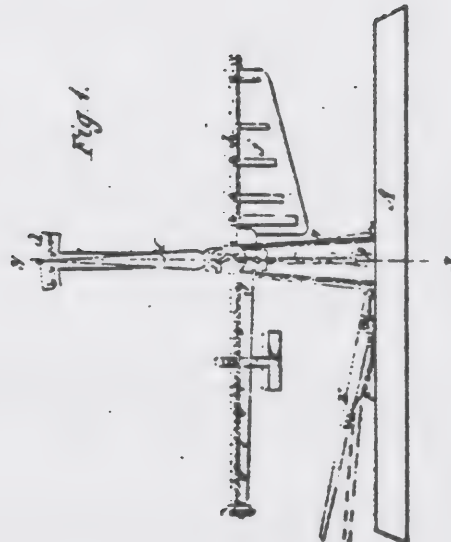
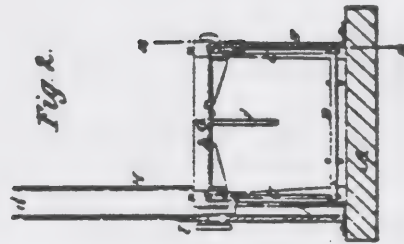
This was the first of three patents for counterfeit coin detecting mechanism by H. Maranville. The simplicity of this design must be admired. There are several makers of this mechanism and the photograph depicts one made by C. E. Stamples of Worcester, Massachusetts. (See IV-4-1 et seq.)

F. J. Herper.

Counterfeit Coin Detector.

N^o 10,973.

Patented Dec. 29, 1857.



UNITED STATES PATENT OFFICE

FERDINAND J. HERPERS, OF NEWARK, NEW JERSEY
BALANCE SCALE FOR DETECTING COUNTERFEIT MONEY

Specification of Letters Patent No. 18,973, dated December 29, 1857

To all whom it may concern:

Be it known that I, F. J. HERPERS, of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Implement or Device for detecting Counterfeit Gold Coin; and I do hereby declare that the following is a full, clear, and exact description of same, reference being had to the annexed drawings, making a part of this specification, in which-

Figure 1, is a longitudinal vertical section of my improvement, x, x, Fig. 2, showing the plane of section. Fig. 2 is a transverse vertical section of ditto, y, y, Fig. 1, showing the plane of section. Fig. 3, is a plan or top view of ditto.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists of a new article of manufacture, viz, a coin balance constructed substantially as hereinafter described.

To enable others skilled in the art to make and use my invention I will proceed to describe it.

A represents the base of the implement, and B, B, are two uprights attached to the base.

C, C, represents two vertical rods which are placed at the inner sides of the B, B, one to each. The lower ends of these rods are connected to the ends of a horizontal rod D, which is attached to the inner end of a lever E, said lever being pivoted at a, to the base A, and having a spring F, underneath it, the spring keeping the outer end of the lever elevated, and consequently the inner end depressed.

To the upper end of the rods, C, C, rectangular blocks b, b, are attached. These blocks b, fit in the uprights B, B, which are constructed of metal and bent or form of three sides so as to serve as guides for the blocks- see Figs. 1 and 3. The blocks b. b. are also constructed of metal and have each a triangular opening or bearing c, made through them to receive the ends of a bar G, which are made in triangular or knife edged form, similar to the pivots of all scale beams. To one end of the bar G, an index H, is attached and a vertical bar I, is suspended to said bar near the index H the lower end of the bar I, being heavier than its upper part so that it will be retained in a vertical position, and the upper end of

said bar having a segment d, attached to it with a vertical mark e. made at its center -see Fig.1.

To the bar G, the scale beam J is attached. One end or part, f, of this scale beam is graduated or has small holes g, made to receive the point of a weight K, said holes being made in the beam at proper points and numbered corresponding to the different denominations of U. S. gold coins, see Fig. 3. To the under side of the plate h, a vertical plate j is attached, said plate being slotted vertically, the vertical slots i, and being in line with them, see Fig. 1.

The knife edge ends of the bar G, fit in V-shaped notches k, in the upper ends of the uprights B, B, when the implement is not in use - the ends of the bar being kept in the notches k, by the spring F. By this means the bearings and knife edges of the bar G, are kept in order or prevented from being injured by unnecessary wear.

The implement is used as follows. Suppose a gold piece is to be tested. The coin is placed in the slot marked \$2 1/2 in the plate h, said coin also fitting in the slot in the plate j, directly in line with the slot in the plate h. If the coin fits snugly in these slots it is of proper dimensions. The outer end of the lever E, is then depressed and the blocks b, are elevated so that the bearings c, are raised above the upper ends of the uprights B, B, and the ends of the bar G raised above or out of the notches in the upper ends of the uprights B, B. The scale beam J, then rests in the bearings c, and the point of the weight K, being placed in the point marked 2 1/2 on the end or part f, of the scale beam, the coin will more than counterbalance the weight and the index H, will be moved to the right of the mark e, on the segment d, and coin is proved to be genuine.

Counterfeit coin, if of the same size as the genuine ones, are necessarily, lighter, because the alloy is of less specific gravity than gold. If spurious coin be of the same weight as a genuine one, the spurious coin will necessarily be large, consequently by measuring and weighing the spurious one may be readily detected.

I have graduated the scale beam so that new genuine coins will more than counterbalance the weight K in order to allow for a deficiency in weight occasioned by wear, but the wear will never be so great as to prevent genuine coins from exactly balancing the weight and causing the index to be at point e, on the segment. If a coin be not sufficiently heavy to do this, it is spurious.

I have practically tested the above described machine as follows: I took two pieces of gold, one bring 21 5/8 carats U. S. standard, and the other 18 carats. There two pieces I worked into wires exactly of the same thickness. The piece of 21 5/8 carats, I made of the same weight as a half eagle or \$5 gold piece. The piece of 18 carats wire was then cut down so as to

correspond exactly in size with the wire of $21 \frac{5}{8}$ carats. I then weighed the two pieces of wire and found the wire of 18 carats to be 18 grains lighter than the one of $21 \frac{5}{8}$ carats, thereby showing a difference of $\frac{3}{5}$ grains on the dollar. If therefore, an allowance of one grain be made for the wear of gold coin, to which extent it probably will not wear, as only the projecting surfaces are exposed, the implement will detect base coin made of as good quality or of as fine gold as profit would permit.

I am aware that there is some coin a small difference in size owing to the different degrees of pressure given it by coining, but this difference is so minute and the difference between the genuine coin and the 18-carat gold so great, being (after a deduction of one grain on the dollar for wear) $2 \frac{3}{5}$ grains, that a well constructed implement will detect any base coin. The accuracy therefore, of an implement for the purpose of detecting base coin is important, and by having the implement constructed or arranged as shown so that the beam is not allowed to rest on the bearings when not in use, the bearings are kept in perfect order, being subject to wear only when the implement is use. I am aware that implements have been previously invented for effecting the same purpose as the one herein described. I therefore do not claim detecting spurious coin by weight and measurement irrespective of the construction of the implement as described, but to the best of my knowledge and belief, it is new in balances of this description to arrange the knife edges as herein described, so that the knife edges can only come in contact with their bearings at the moment of weighing.

I do not claim to be the inventor of sliding or movable supports for the knife edges, as this feature is seen in jewelers' scales, apothecaries' scales, etc. But in all of these, it will be found that the knife edges rest upon their bearings when the scales are not in use. Consequently every concussion or jarring in the apparatus or building injures the knife edges and bearings and after a time the scales become inaccurate. This can never happen to my improvement, because the knife edges never come in contact with their bearings, except when the lever is pressed, and they wholly separate and are held steadily apart when the lever is released. It is also new to have vertical pockets of the exact size of the coins, upon the fulcrum bar, which pockets serve as measures of the dimensions of the pieces of money, and also indicate the exact spot where the coin is to be placed by the operator. I do not, however, claim, broadly, the placing of gages or receptacles upon balances. But no balances have ever been arranged with a number of vertical pockets in close proximity. The apparatus is thus made very compact and highly convenient.

I do not claim to be the inventor of swinging index bars for weighing machines; and therefore I disclaim the same as used on my apparatus. Their employment is not essential as my instrument can be made and used either with or without the same, as may be desired.

PATENT NO. 18,973 - continued

No coin balance like mine has ever been known or use, to the best of my knowledge and belief. It is therefore a new article of manufacture, and possesses useful qualities not seen in any other analogous article.

I claim and desire to secure by Letters Patent, as a new article of manufacture,-

A coin balance when constructed as herein described.

FERDINAND J. HERPERS

Witnesses:

James F. Buckley,
W. Tusch

AUTHORS' COMMENT

The new feature of this patent as emphasized by the patentee was to prevent the knife edge of the fulcrum from being damaged when the balance was not in use. On the first examples of the product the mechanism was supported in two legs rising on each side of the center of a flat base. The knife edge of the beam was not in contact with its bearing surface until a long rocker arm on the base was manually depressed to elevate the bearing under the knife edge of the balance beam. The rocker arm had a spring beneath it to keep the lifter down when not in use. This prevented the knife edge damage when the mechanism was being moved, jolted or subject to vibration.

The lifter was abandoned in later models and the balance redesigned so as to supported in an elevated cast iron frame with four legs. In place of a lifter a catch attached to the frame could be manually turned when the balance was not in use to keep the balance beam from rocking and thus damage the knife edge. This later model is shown in Chapter IV.

The coin slots on the brass beam and the scale and its poise remained unchanged in the redesign.

(For more see IV-4-5 et seq.)

H. MARANVILLE.

Coin Detector.

No. 27,140.

Patented Feb 14, 1860.

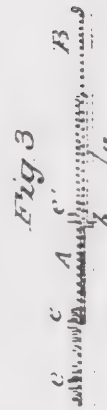
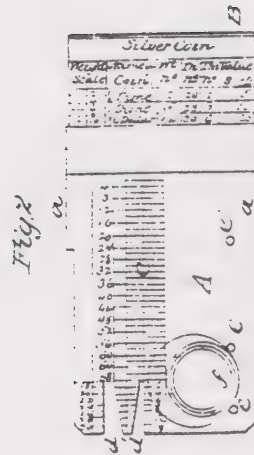
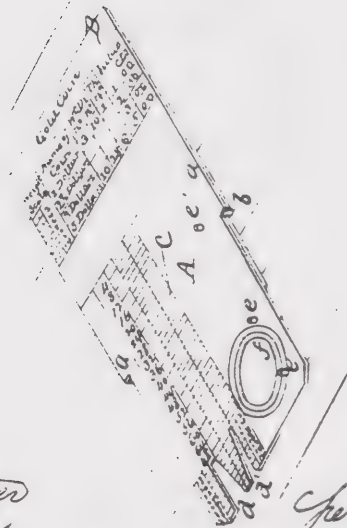


Fig 1



Witnesses

E. S. Spencer
J. W. Combs

Inventor

H. Maranville
per Muny & Attorneys

UNITED STATES PATENT OFFICE
H. MARANVILLE, OF CLINTON, OHIO

COIN-DETECTOR

Specification of Letters Patent No. 27,140, dated February 14, 1860

To all whom it may concern:

Be it known that I, H. MARANVILLE, of Clinton, in the county of Summit, and State of Ohio, have invented a new and improved Coin-Detector; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which-

Figure 1, represents a perspective view of my invention, arranged for testing gold coin. Fig. 2 is a plan or top view of the same, arranged for testing silver coin. Fig. 3 is a longitudinal vertical section of the same.

Similar letters of reference in the three views indicate corresponding parts.

This instrument is designed for testing the weight and the dimensions viz: diameter and thickness, of gold and silver coin, and my invention consists in combining a slide marked with suitable scales with a plate which is furnished with two knife edges on its under side and with two projections above in such a manner that the standard weight of a certain coin placed against the two projections on the upper side of the plate turns the same on the above named edges, and raises the slide, when the latter is drawn out to a certain point which is marked to correspond to the coin in question, said plate being also furnished with a scale to test the diameter, and with incisions or notches to test the thickness of various coins, the whole being so arranged to as to make a new and improved article of manufacture

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents a plate of sheet-brass or any other suitable material, the edges a of which are turned over for a little less than one half the length of the plate, so as to form guides for a slide B. Each of the edges a is also turned down so as to form the two knife edges b which are so situated that a line drawn through them divides the plate in two unequal parts, leaving that part to which the guides a are attached, the lightest. The upper surface of the plate A is marked with the diameter scale c which is obtained by dividing two inches into 64 parts or degrees, 1/32 of an inch each and from the inner end of the scale toward the outer edge of the plate.

PATENT NO. 27,140 - continued

On the outer end of the plate A are two incisions d, d', one half inch deep, each, to form the scale of thickness. These incisions are tapering, and they are so formed that the inner end of the largest incision d is equal in width to the outer end of the smallest incision d', both together in fact forming one continuous incision of one inch in depth. The large end of the incision d is $19/110$ or $38/220$ of an inch in width. The whole space from the small end of the incision d' to the large end of the incision d, is divided into 32 parts, marked with figures from 1 to 32. Figs. 1, and 2, thus making one degree in diameter scale $6 \frac{7}{8}$ times as large as one degree in thickness scale. Two studs or pins e, are secured in the top surface of the plate A, and a circle or series of concentric circle f, indicate the place which the coin has to occupy in order to test its weight as will be hereinafter more fully explained. An extra pin e' is inserted into the plate at a greater distance from its outer edge for the purpose of testing slug, or any other coin too heavy to be tested between the studs e.

The slide B which moves quite easily between the guides a, is marked on both sides with different scales. One side is intended for gold and the other for silver coin, and each side is divided lengthwise into 7 columns. The first column is for the weight and it is marked "Wt. scale" over head and numbered from the head downward, 2, 4, 6, 8 etc. The second column is for the names of coin, and it is marked accordingly over head. The third column is for the numbers of the first column, corresponding to the weight of the different coins, the names of which are marked in the second column and it is marked Wt. No. (weight number) over head. The fourth column is for the numbers of the diameters as taken from the scale c or the plate A, and it is marked "Di. No." overhead. The fifth column is for the thickness numbers, taken from the numbers on the sides of the incisions d, d', to correspond to the thickness of the different coins, and it is marked Th. No. over head. The sixth and seventh columns are for giving the value of each coin in dollars and cents, and they are marked \$ and cts. over head. By having one genuine coin of each kind, the different columns can easily be filled out, and the size of the instrument is such that it gives room for all the known coins of the civilized world.

The manipulations necessary to test a certain coin by my instrument will be best understood by one or two examples. The first and most necessary thing, especially in testing silver coin, is to try the sound or "jingle" of the coin, for there are some spurious coins purporting to be silver which are composed mostly of lead or other base metal, the specific gravity of which is nearly the same as silver. If the "jingle" is bad, the coin need not be tested any further; it is spurious; but any of the metals generally used to give the coin "jingle" will be detected by the instrument, as all metals are lighter than silver. But to proceed further, if a quarter dollar is to be tested and the "jingle" is found to be good, its weight is first tested. The side of the slide B, marked "Silver coin" is turned up and the slide pulled out until the weight number 12 found on the third

PATENT NO. 27,140 - continued

column and opposite to the name of the coin (quarter dollar) comes exactly in line with the lower edge of the plate A. The coin is now placed on the plate, so as to touch both studs e, as shown in red outlines in Fig. 2, and if the weight of the coin is correct, it will gently raise the slide B, turning the outer edge of the plate down. This will not be the case if the coin is spurious and too light. If the weight of the coin is found to be correct, its diameter is tested by placing it on the plate A, so that its edge is precisely on the line drawn across said plate near its inner end. The opposite edge of the quarter dollar, if the coin is good, will correspond with the mark 30 on the scale C. In the same manner the thickness of the coin is tested by placing it edgewise into the incision d', and if the coin is good, it will enter this incision exactly to the mark 6, on its side. One more example will be sufficient to make the use of my instrument clear to everybody. Suppose a 5 dollar gold piece is to be tested and the slide is turned over so bring the slide marked "gold coin" on the top. The weight of the coin is now tested in the same manner as above described, and if the slide is drawn out to the number 16, on the weight scale, and the 5 dollar piece is placed, against the studs e, it will gently raise the slide, if its weight is correct. The diameter of the coin and its thickness is now tested in the same manner as above described, and if the slide is drawn out to the number 16, on the weight scale, and the 5 dollar piece is placed against the studs e, it will gently raise the slide, if its weight is correct. The diameter of the coin and its thickness is now tested in the same manner as above described, and if the coin is good the diameter will be found to be 28, and its thickness 6 as marked in the corresponding columns on the slide.

It must be remarked that the thickness and the diameter of the same coins varies to some extent. My instrument is marked according to the latest standard coins of the various denomination, and at the same time the diameter scale is in such relation to the thickness scale, that one degree more on the one gives one degree less on the other, in order to retain the same weight so that my instrument can be used also for coins which vary from those coins which served in marking the instrument.

What I claim as new, and desire to secure by Letters Patent, as a new article of manufacture, is.

The arrangement of the plate A with the diameter scale c, and incisions d,d', and with knife edges b, in combination with the slide B, marked on one side for gold, and on the other side for silver coins, as herein described, and operating in the manner and for the purpose specified.

H. MARANVILLE.

Witness:

CHAS. RINEHART

W.M. HEFFELMAN

PATENT NO. 27,140 - continued

AUTHORS' COMMENTS

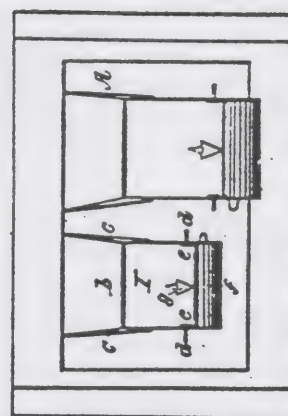
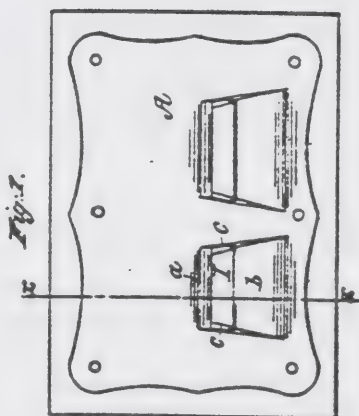
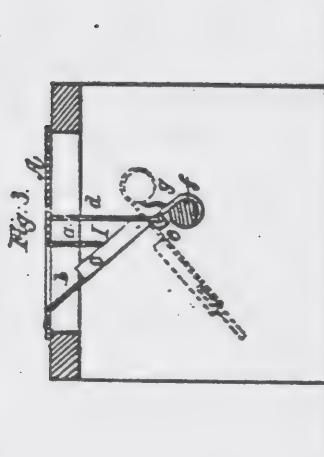
This is the second of the three H. Maranville counterfeit coin detecting mechanisms which he patented. Here again, the mechanism is a simple type that would require little in the way of maintenance and was just as readily portable as his first patented mechanism. The photograph of this mechanism shown in Chapter IV is exactly as the patent papers indicate the item to be.

(For more see II-2A-1, II-2A-7, II-2D-5, et seq.)

W. PAINTER.
Counterfeit Coin Detector.

No. 35.834.

Patented July 8, 1862.



Witnesses:

John W. Lead

Inventor:

W. Painter
per *Wm. H. Co.*
Attorney

UNITED STATES PATENT OFFICE

WILLIAM PAINTER, OF FALLSTON, MARYLAND

IMPROVEMENT IN COUNTERFEIT-COIN DETECTORS.

Specification forming part of Letters Patent No. 35,834, dated July 8,
1862

To all whom it may concern:

Be it known that I, WILLIAM PAINTER, of Fallston, in the county of Harford and State of Maryland, have invented a new and Improved Counterfeit-Coin Detector; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which-

Figure 1 is a plan or top view of my invention. Fig. 2 is an inverted plan of the same. Fig. 3 is a vertical section of the same, taken in the line x x, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to obtain a counterfeit-coin detector which will admit of being applied to a counter or table directly over a drawer or receptacle and serve as a means for conveying the genuine coin into the drawer, and at the same time serves as a means to detect spurious coin that may be placed into it for the purpose of being passed into the drawer, thereby avoiding any waste of time in testing coin, as is now the case in using the various detectors hitherto devised.

To this end the invention consists in the employment or use of one or more suspended or tilting spouts arranged with gages in such a manner that each piece of coin in its passage through the detector into the receptacle or drawer is weighed and gaged or measured, and any spurious piece which of course cannot pass these tests, will be detected at once, as it cannot pass into the receptacle or drawer.

To enable those skilled in the art to fully understand and construct my invention, I will fully proceed to describe it.

A represents a metal plate, which is screwed to the top of the counter or table directly over a receptacle or drawer. The plate is slotted or cut in the form of an H, and the metal, a, at the back part of the cut bent down to about a vertical position, the metal b, at the front part of the cut being bent down so as to form an inclined plane at an angle of about forty-five degrees as shown clearly in Fig. 3.

I is a spout, which may be formed of a plate of sheet metal bent upward at its side, as shown at, c c, in Fig. 1. The spout I is suspended between two vertical rods, d d, which are secured to the under side of the plate A, and are bent towards each other horizontally at their lower ends, and fitted in pendent ears, e e, attached to spout I. The spout I is allowed to work freely on the lower ends of the rods d d, and is loaded at its back end, as shown at f, so as to keep the upper edges of the slides c c in contact with the lower edge of a and the front edge of the spout in line with the inclined plane b, as shown clearly in Fig. 3. The weight f, is designed to be a trifle lighter than the genuine coin to be tested, and the width of the spout I - that is to say, the space between the sides c c - is to be wider than the diameter of the coin, and the space between the bottom of spout I and the lower edge of a equal in height to the thickness of said coin. The spout I is provided with a stop or projection, g, at its lower part, and the distance between this stop and the lower edge of the inclined plane b is equal in diameter to the standard or genuine coin.

The operation is as follows: In order to put the coin in the drawer and test it at the same time, it is placed on the incline plane b, and it slides down by its own gravity into spout I and is stopped by the projection g. The coin, being a trifle heavier than the weight f, tilts the spout I, as shown in red, Fig. 3, and the coin consequently drops into the drawer, the spout returning to its original position under the action of the weight f as soon as the coin leaves it. If the coin be not a genuine one, it must be lighter if of the same dimensions, and consequently will be incapable of tilting the spout I, and if it be equal in weight to a genuine one its dimensions must be greater, the diameter being larger, or, if of equal diameter, of greater thickness; hence a counterfeit coin of the standard weight and thickness will be prevented from passing fully down the spout g, and the lower edge of b being too short to allow it to clear b and pass into the spout; and if the spurious coin be of proper standard diameter it must be thicker, and the space between the bottom of the spout and the lower edge of a will not be sufficiently high for it to pass through.

The spouts I may be made of various sizes to suit different sized coins, and loaded accordingly. The invention, it will of course be seen, is applicable to both gold and silver coins.

I would remark that the pendent rods d d, may be allowed to yield or give under pressure, in order to compensate for the slight variation in diameter of standard coin, produced by the milling of the edges. This variation, however, is so slight that it cannot affect the efficiency of the device as a detector.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is -

PATENT NO. 35,834 - continued

The particular arrangement of the horizontal plate A, vertical plate a, incline plane b, and spout, and suspended between the pendent yielding rods d d, substantially as and for the purpose herein set forth.

WM. PAINTER

Witnesses:

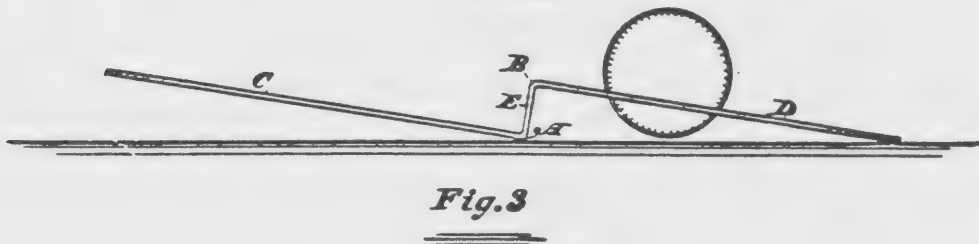
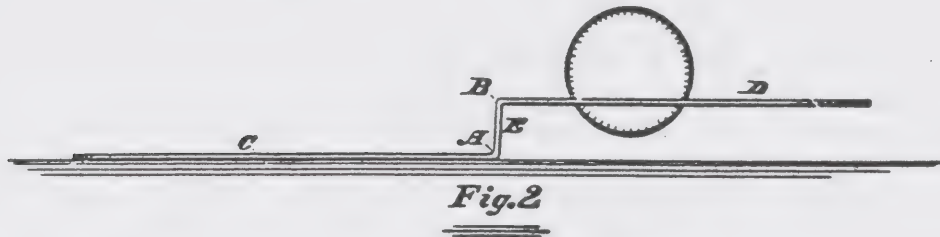
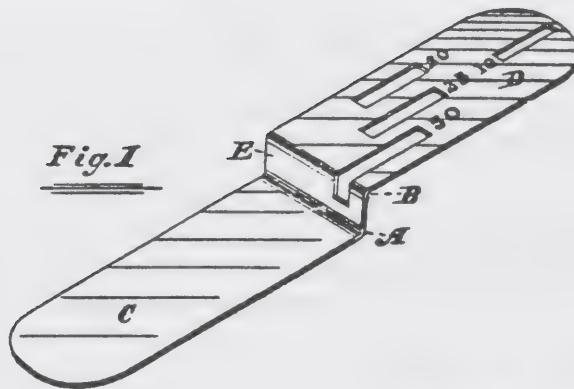
ROBT. CHALFANT.

EDWD. PAINTER.

J. A. THOMPSON.
DETECTORS OF COUNTERFEIT COIN.

No. 187,936.

Patented Feb. 27, 1877.



Attest:

W. T. Baker
A. P. Tsch

INVENTOR:

John A. Thompson

UNITED STATES PATENT OFFICE

JOHN A. THOMPSON, OF CHICAGO, ASSIGNOR TO
FRANCIS M. SMITH, OF
LAKE, ILLINOIS

IMPROVEMENT IN DETECTERS OF COUNTERFEIT COIN

Specifications forming part of Letters Patent No. 187,936, dated
February 27, 1877; application filed January 12, 1877.

To all whom it may concern:

Be it known that I, John A. Thompson, of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Detectors of Counterfeit Coins, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

Fig. 1 is a perspective top view of my detector. Fig. 2 is a side view in the position which it occupies when testing a counterfeit coin. Fig. 3 is a side view in the position it occupies when testing a genuine coin.

The instrument is simply a piece of metal or other suitable material, (in size and shape similar to an ordinary paper-knife with a right angle bend in or near the middle, as shown in the drawings. On one side of this right-angular bend or fulcrum the plate is plain, with its outer end, when the instrument is not in use, resting on the table, counter, desk, or other level support. On the other side of the right-angular bend or fulcrum the plate contains slots, as per drawings, for coins of different denominations to be tested. The slotted end of the plate contains, say, four places for United States coin, marked respectively ten, twenty, twenty-five, fifty, corresponding to the denominations, in cents, of the most common United States silver coins, and may contain a slot for any coins, United States or foreign, silver or gold. These slots are of such nicely and properly graduated distances from the right-angular bend or fulcrum, according to metrical rules and tests, that when a genuine coin is placed in its proper receptacle, it barely tips the plate on its angular bend or fulcrum until the slotted end rests on the table or other support, as shown in Fig. 3 of the drawings. Consequently, when a counterfeit coin is placed in the slot corresponding to its denomination, it is immediately detected by its light weight in not tipping the balance, or its greater bulk in filling the slot, as the spurious metal, as is well known, is almost invariably lighter than the genuine, and the coin must necessarily lighter or larger.

What I claim as new and as my invention, and desire to secure by Letters Patent, is -

PATENT NO. 187,936 - continued

The coin-weighing plate C D, provided with a right-angular bend A B and slotted at D, substantially as described, and for the purpose set forth.

JOHN A. THOMPSON.

Witnesses:

F.J. SEYBOLD,
A.J. KIDD.

AUTHORS' COMMENT

John Thompson, along with H. Maranville, were unique in having three patents issued for counterfeit coin detecting mechanisms. This patent was Thompson's first and, like Maranville, the devices were of the simple type. Many collectors and antique scale dealers still refer to this particular device as *Berrian's Patent* when in reality it was Thompson's patent and made by the Berrian Manufacturing Company of New York. There is no record of Berrian ever being granted a patent. Further, the Berrian detector clearly indicates the patent date as February 27, 1877, the date of Thompson's patent. Thompson assigned his patent as noted on the patent papers but it must be assumed Berrian obtained permission to use it.

(For more see II-2B-1, II-2B-15, IV-3-1, IV-3-7, et seq.)

J. WIARDA
COUNTERFEIT COIN DETECTOR.

No. 188,712.

Patented March 20, 1877.

Fig. 1.



Fig. 2.

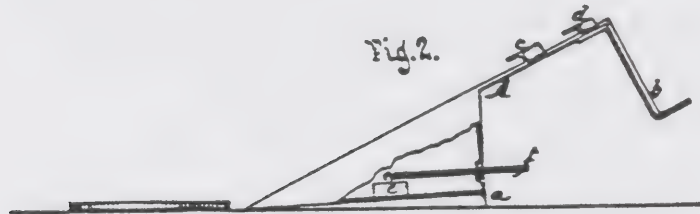
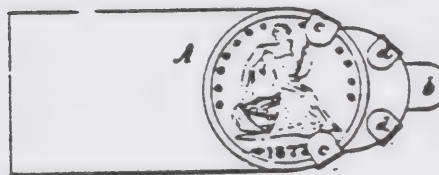


Fig. 3.



Witnesses

Geo. Shufeld.
James W. Wright, Jr.

Inventor.

John Wiarda
by
Van Santvoord & Hauff

his attorneys.

UNITED STATES PATENT OFFICE

JOHN WIARDA, OF GREEN POINT, NEW YORK,

IMPROVEMENT IN COUNTERFEIT-COIN DETECTERS

Specifications forming part of Letters Patent No. 188,712, dated
March 20, 1877; application filed February 21, 1877.

To all whom it may concern:

Be it known that I, JOHN WIARDA, of Green Point, in the county of Kings and State of New York, have invented a new and Improved Coin Detector, which invention is fully set forth in the following specification, reference being had to the accompanying drawing, in which-

Figure 1 represents a side of my detector when a genuine coin is placed thereon. Fig. 2 is a sectional view of the same when the coin is taken off. Fig. 3 is a plan or top view of the same with the coin on.

Similar letters indicate corresponding parts.

This invention consists in the combination, with a coin supporting platform, of a knife-edged support, a balance-weight, and a stop, the coin supporting platform being provided with gages which control the correct position of different coins, so that when the platform is placed in a horizontal position on a table or other support, and a genuine coin is placed against the gages provided for such coin, the platform retains its horizontal position; but if a base coin is substituted for the genuine coin, the platform is tipped up and the coin slides off from same. With the balance-weight is combined an adjusting screw, so that the same can be readily brought in the correct position.

In the drawing, the letter A, designates a platform, which is provided in its middle with a knife-edged support, a, and at one end with a stop or leg, b. Near this end of the platform are two pairs of lugs, c c d d, the lugs c, c, forming gages for fifty cent pieces, and the lugs d, d, for the twenty-five cent pieces. Below the platform A is situated a balance-weight c, which can be adjusted by a set screw, f. In the example shown in the drawing this weight is enclosed in a chamber or case secured to the under surface of the platform, and said weight rests on the bottom of this case; but it is obvious that the balance-weight may be combined with the platform in any desired manner.

When my detector is placed on a horizontal surface, and the platform is brought in the position shown in Fig. 1, if a genuine fifty-cent piece is put on said platform against the gages c, c, the platform will retain its position, the weight of the coin being just sufficient to keep the leg b in contact with the supporting surface; but if a base fifty-cent piece is substituted for the good coin, the weight of which is less than the genuine

PATENT NO. 188.712 - continued

coin, the platform tips to the position shown on Fig. 2, and the coin slides off.

The gages c, c, d, d, are bent over in the form of hooks, leaving just enough room for the introduction of a genuine coin. If a coin is made of base metal, and of equal weight and diameter with a genuine coin, its thickness must be slightly increased, so as to produce the required weight. A coin of this kind finds no room beneath the gages c, c, d, d, and its base nature is immediately detected. If desired, the capacity of my detector can be readily increased for three or four different kinds of coins, such as silver dollars, half dollars, quarters and ten-cent pieces.

What I claim as new, and desire to obtain by Letters Patent, is -

The combination, with a coin-supporting platform, A, of a knife-edged support, a, a stop or leg, b, and a balance-weight, c, the platform being provided with gages which control the correct position of the coin to be tested, substantially as and form the purpose shown and described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 14th day of February, 1887.

JOHN WIARDA. [L.S.]

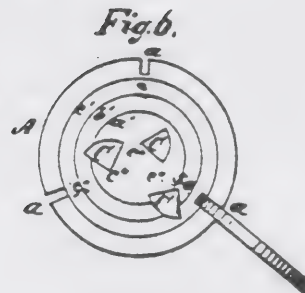
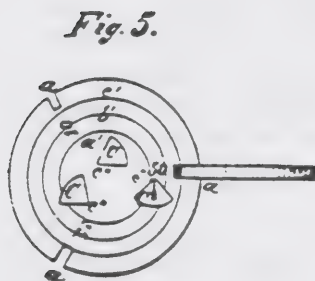
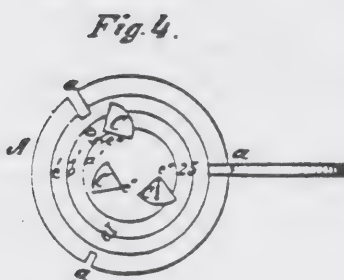
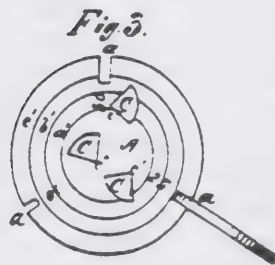
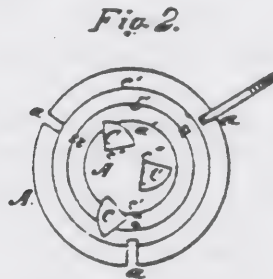
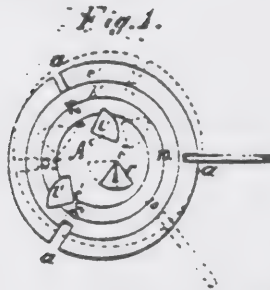
Witnesses:

W. HAUFF,
E.F. KASTENHUBER.

J. W. SUTTON.
COUNTERFEIT COIN DETECTOR.

No. 188,982.

Patented March 27, 1877.



Witnesses:
Henry C. Smith
Edward Holly

Inventor:
John W. Sutton
per *James M. Whitney.*

Atty.

UNITED STATES PATENT OFFICE

JOHN W. SUTTON, OF NEW YORK, N. Y.

IMPROVEMENT IN COUNTERFEIT-COIN DETECTERS

Specification forming part of Letters Patent No. 188,982, dated March 27, 1877; application filed February 28, 1877.

To all whom it may concern::

Be it known that I, JOHN W. SUTTON, of the city, county, and state of New York have invented an Improved Counterfeit-Coin Detector, of which the following is a specification:

The object of this invention is to provide a simple means for detecting base or clipped coin; and it comprises, first, in a counterfeit-coin detector, a weighing-disk constructed with bearings for a knife-edge where on the device maybe fulcrumed in testing the weight of coin, and with receivers for holding the coin in proper relation with the knife edged bearing, so that full weight will be indicated by the downward tilting of the coin, and light weight indicated by the upward tilting of latter.

The invention also comprises, in combination with the feature just herein first specified, gage-notches or graduated receivers, serving not only to hold the coins while being weighed, but also to gage the thickness thereof, so that any variation from the true standard will be made manifest.

Figure 1 is a side view of a counterfeit ten cent coin detector made according to my invention, showing the same as operating with a coin of true or standard weight, and Fig. 2 is a like view, showing the same as operating with a coin of light weight. Fig. 3 is a view corresponding to Fig. 1, except that the device is shown in testing a twenty-five cent coin. Fig. 4. is a view corresponding to Fig. 3, except that the device is shown as testing the thickness of a counterfeit coin. Figs. 5 and 6 correspond to Figs. 1 and 3, except that the device is represented as testing a true fifty-cent coin.

A is a circular disk, of metal, in the circumference of which are provided a number corresponding to the collective number of denominations of coins to be tested, of slots or recesses a. One of these recesses marked 10, is of a width equal to the thickness of a standard ten-cent coin, and of a depth sufficient to retain said coin when inserted edgewise therein. In a like manner the receivers, marked respectively, 25 and 50, have a width respectively corresponding to the thickness of a standard twenty-five-cent and fifty-cent coin, and serve, in like manner, to retain the coins in place when inserted therein edgewise.

PAT. NO. 188,982
[CHP. II: SEC. 2A]

[II-2A-18A]

It will be seen from this that if a counterfeit or sweated coin is attempted to be inserted into one or the other of these receivers, a too great thickness of such coin will prevent its entering the receiver, while a too great thickness will be perceptible by the lack of tightness of the coin in such receiver.

On one side or flat surface of the disk A may be provided the circular lines a,' b,' c',; a' having a diameter equal to that of a standard ten-cent coin, b', equal to that of a standard twenty-five cent coin, and c' equal to that of a standard fifty-cent coin. By placing one or the other of such coins within its appropriate circular mark on the disk A, any variation from true diameter of the standard coin is at once made manifest, and the sweated or bogus character of the coin made evident.

Adjacent to each of the receivers a is an angular opening, c, the angular corners c'' of which is capable of receiving a knife-edge. Each of the openings c is arranged in such relation with its adjacent receiver a, that when the knife-edge is inserted, as just described, the weight of a suitable coin inserted in said adjacent receiver will cause the weight of the coin to more than balance the weight of the disk, the knife-edge serving as a fulcrum; whereas should the coin be too light, as is common with bogus or sweated coin, the weight of the disk will counterbalance that of such coin and move the same in an upward direction, thereby making manifest the light and counterfeit or sophisticated character of such coin.

For example--when a ten-cent coin is inserted in the receiver a, marked 10, the disk being balanced on a knife-edge inserted in the adjacent angular opening c, as shown in Fig. 1, the weight of the coin will turn the parts into the position indicated in dotted outlines in said Fig. 1; whereas, should the coin be light or bogus, it will move in the opposite direction, and its bad character thus made manifest. So, also, in case of twenty-five-cent coin inserted in the receiver a marked 25, the disk supported on a knife-edge, in same manner as explained, the true or standard coin will turn downwards, as indicated in Fig. 3, and the similar result happens when a fifty-cent coin is inserted into the receiver a, marked 50, as represented in Figs. 5 and 6.

It is, of course, to be understood, that by making the receivers a of suitable gage, the circular lines a' b' c' of suitable diameter, and angular openings c, in proper relation with the receivers a, the invention can be adopted to the testing of coins of any country, standard or value.

It is, of course, to be understood, the knife-edge may be most conveniently furnished by the blade of a pen-knife, or other suitable device, it being only required that a sufficient support of fulcrum should be provided, on which the disk may turn, as hereinbefore explained. It is, moreover, to be observed, that the invention, as herein set forth, constitutes a pocket implement which may be carried in the pocket with the same ease and con-

PATENT NO. 188,982 - continued

venience as the coins which it is designed to weigh, thereby enabling the same to be used under all circumstances and exigencies with ease, convenience and dispatch.

What I claim as my invention is-

1. The coin-detector constructed with the receivers a and the angular openings c, arranged in relation thereto, substantially as and for the purpose herein set forth.
2. The receivers a, having a gage or graduated width coincident with the thickness of the coin to be tested, and provided in relation with the angular opening c, substantially as and for the purpose herein set forth.

JOHN W. SUTTON

Witnesses:
EDWARD HOLLY,
H. WELLS, Jr.

AUTHORS' COMMENT

This counterfeit coin detecting mechanism by John W. Sutton is difficult to obtain by collectors. As of this writing about a half dozen have been reported. Their very small size made them easy to lose. Most people did not recognize them as an item to save.

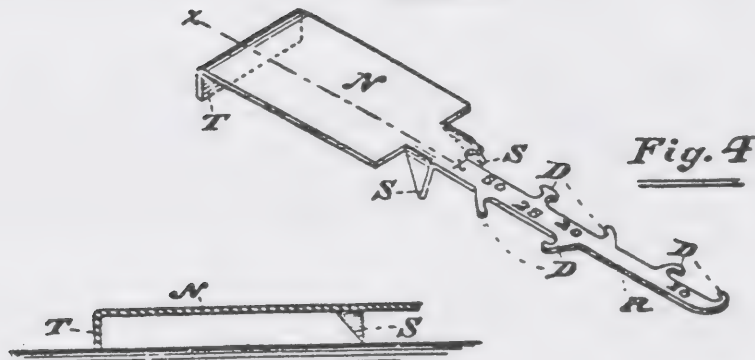
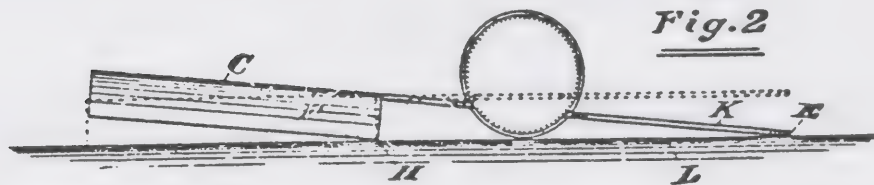
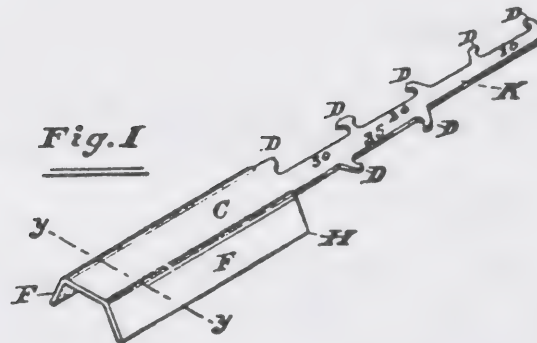
There are two sizes, one for ten cents, twenty five cents and fifty cents and one for twenty five cents, fifty cents and one dollar.

(For more see IV-4-7 et seq.)

J. A. THOMPSON.
COUNTERFEIT COIN DETECTOR.

No. 189,284.

Patented April 3, 1877.



Attest
W. L. Baker
Francis J. Colby

INVENTOR
John A. Thompson

CHAPTER II
UNITED STATES PATENTS

SECTION 2B

UNITED STATES PATENT OFFICE

JOHN A. THOMPSON OF CHICAGO, ILLINOIS

IMPROVEMENT IN COUNTERFEIT-COIN DETECTERS

Specification forming part of Letters Patent No. 189,284, dated April
3, 1877; application filed February 23, 1877.

To all whom it may concern:

Be it known that I, JOHN A. THOMPSON of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Counterfeit-coin Detectors, which improvement is fully set forth in the following specifications, reference being had to the accompanying drawings, in which-

Figure 1 is a perspective view of my invention; Fig. 2, a side of my invention when testing a genuine coin. Fig. 3 is a sectional view on the line y y, Fig. 1

This instrument can be struck out completed (except bending the two flanges F) by one stroke of a die.

The object of the invention is the detection of counterfeit coin. Counterfeit coins are usually lighter than genuine. and on this fact the invention is based.

Flare flanges, on which the instrument rests are bent down from the base or plate C at an angle of from seventy to eighty degrees, as being a suitable angle, but may be at greater or less angle. The part K of the plate C that projects beyond the flanges F is supplied with ears or lugs D, arranged in pairs. Each pair is so constructed as to clasp a coin of the denomination designed to fit it.

The space designed for a United States coin of a given denomination is suitably indicated on the bar K.

The beam or bar C, K is balanced, so as to rest on the flanges F, as shown in Fig. 1. When a genuine United States silver coin is placed in its proper receptacle the bar C, K will be tipped down, as shown in Fig. 2, till the point E rests on the table or support L, the bar C, K turning on the point H of the flanges F.

PATENT NO. 189,289
[CHP. II : SEC. 2B]

[II-2B-1A]

PATENT NO. 189,284 - continued

If a genuine coin of a given denomination is placed in the receptacle corresponding to such denomination the bar K will be tipped, as shown in Fig. 2.

If a counterfeit coin of the proper denomination is placed in either receptacle the instrument remains resting on the flanges F, as shown in Fig. 1.

What I claim as new, and wish to secure by Letters Patent is-

In a counterfeit-coin detector, the bar C K, provided with flanges F, and lugs D, D, substantially as shown and described, and for the purpose set forth.

JOHN A. THOMPSON.

Witnesses:

HENRY C. STRONG,
F.J. SEYBOLD.

AUTHORS' COMMENT

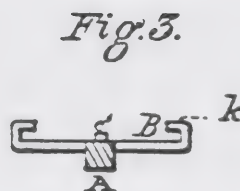
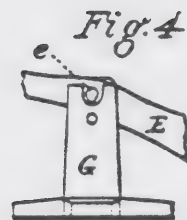
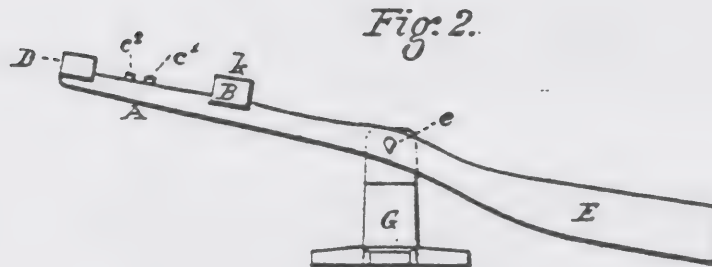
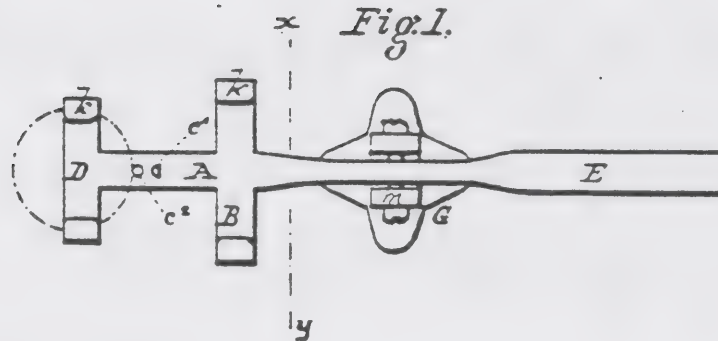
This was the second of John Thompson's patents for a counterfeit coin detector. Again, the simplicity of the design and operation was in sharp contrast to some of the later mechanisms that would be patented.

(For more see II-2A-14, II-2B-15, IV-3-1, IV-3-7, et seq.)

P. DOHERTY.
COIN-DETECTOR.

No. 192,241.

Patented June 19, 1877.



Witnesses.

John Kilgus
D. Louis Shivers.

Inventor.

Patrick Doherty
per Edw. Brown
attorney.

UNITED STATES PATENT OFFICE

PATRICK DOHERTY OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN COIN-DETECTERS.

Specification forming part of Letters Patent No. 192,241 dated June 19, 1877; application filed April 2, 1877.

To all whom it may concern;

Be it known that I, PATRICK DOHERTY, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Counterfeit-Coin Detector, which improvemet is fully set forth in the following specification and accompanying drawings, in which-

Figure 1 is a plan of the instrument. Fig. 2 is an elevation, with the cap of the stand removed. Fig. 3 is a cross-section on line x, y showing the gage. Fig. 4 shows the side of the stand, with the cap removed.

My invention consists in a balance-lever, with gages and adjusting stop attached, for weighing and measuring silver halves and quarter dollars, or gold coin, detecting the counterfeits.

A represents the gage-arm, and E the weighted or resisting arm made in the form of an elongated weight, with easy curves, to facilitate the forming and polishing of the arm. G is the stand, m is the cap covering the pivot e.

For the detection of countefeit half-dollars the gage-arm has secured to it a cross-piece, B, turned up and bent over, as shown in Fig. 3. The vertical portion of this cross-piece gages the diameter of the coin and the turned-over flange k, gages its thickness. An adjusting stop, c¹, is inserted in the gage-arm at such a distance from the cross-piece, B, as permit more than half of the coin to be inserted in the gage B. The form of this stop is of such convenience that it provides for an easy mode of accurately adjusting the balance of the instrument. This is done by filing off a small portion of the inside of the stop until the position of the coin is such as to turn the balance.

To detect the connterfeit quarters there is a similar gage, D, at the end of the gage-arm, and a similar stop c². The quarter dollars enter the gage from the extremity of the arm, and the halves enter their partucular gage from the pivot side. The pivot c is made of steel, and is knife edged, as in scale-beams, and is supported on the stand G.

I do not confine myself to the number of gages herein shown, or as to the precise manner of forming the lip k, as a large-headed screw might readily be used. Gold coin may also be tested in a similar manner.

PATENT NO. 189,289
[CHP. II : SEC. 2B]

[II-2B-3A]

PATENT NO. 192,241 - continued

As the specific gravity of silver is greater than that of any baser metal a counterfeit must be either larger in size, if of the same weight, or lighter, if of the same size, than the genuine coin.

When the coin passes through the gage to the stop c^1 more than half the coin is held by the gage which tests the diameter as well as the thickness of the coin, and the lever tests the weight.

It will thus be seen that, with one operation or manipulation of the coin, I can test it in diameter, thickness, and weight, and thus determine a counterfeit.

I claim-

1. In a counterfeit-coin detector, the combination of the resisting-arm E, the arm A, the gage B for testing the diameter and thickness of the coin, and the adjusting-stop c^1 , as herein described.
2. The combination of the arm E, the arm A, a gage for detecting the diameter of the coin, and a stop c^1 , for adjusting the instrument, as herein described.
3. The combination of the arms E A, the gages B and D, and the adjusting-stops e^1 c^2 , as herein described.

PATRICK DOHERTY.

Witnesses:

EDWD. BROWN,
JOHN F. GRANT.

AUTHORS' COMMENT

Doherty was mistaken in his statement in his patent papers when he noted *As the specific gravity of silver is greater than that of any baser metal*. The specific gravity of pure silver is 10.55 while the specific gravity of pure lead is 11.352. Thus a coin made in the exact diameter and weight would be slightly thinner than a regular issued coin but would readily fit within Doherty's detector and still trip the counterweight. However as previously stated in Chapter I, the lack of *TIMBER* would usually reveal the presence of lead.

PATENT NO. 192,241 - continued

ADVERTISEMENT BY JOHN S. DYE
FOR DOHERTY DETECTOR

Infallible Test for Silver Coin.



The only one approved and daily in use by the U. S. Treasury at Washington, the U. S. Mint at Philadelphia, and other Government offices, where it has been thoroughly tested by experts, who recommend it as being *Perfectly Reliable*, and the best they have seen. This instrument makes by one move the **THREE ESSENTIAL TESTS OF WEIGHT, DIAMETER AND THICKNESS**. It detects the most dangerous counterfeit instantly. It has already proved its superior merit in over fifty banks, where it has taken the place of various other tests. It is very neat and strong, made of hard brass with steel pivot, finely and accurately adjusted and cannot get out of order.

We believe every invention made during the last quarter of the century, for the detection of counterfeit coin has been presented to us for inspection and endorsement, but with this single exception we have always found them unreliable; we therefore take pleasure in recommending it as of great practical value for the uses intended, Nicely enclosed in a box and sent to any address, with postage paid, on receipt of price.

JOHN S. DYE.

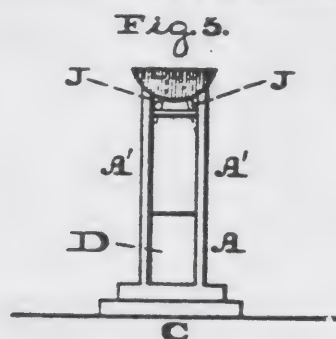
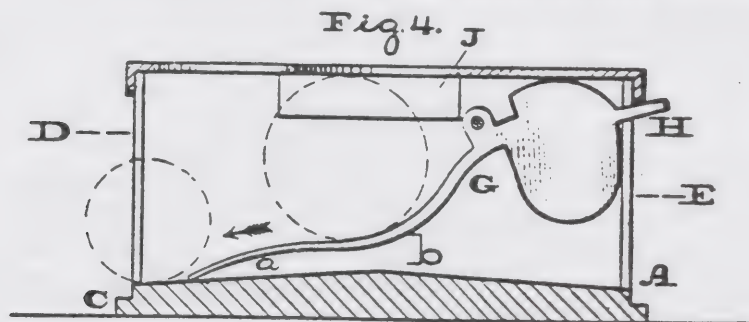
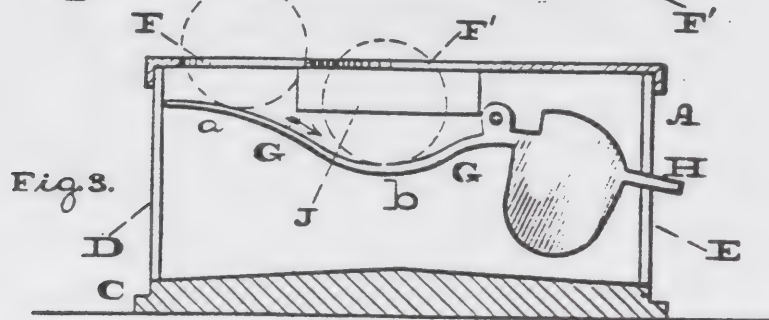
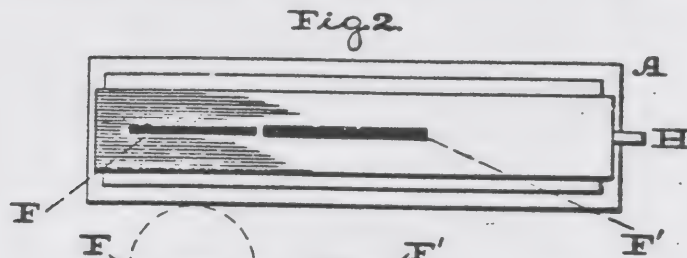
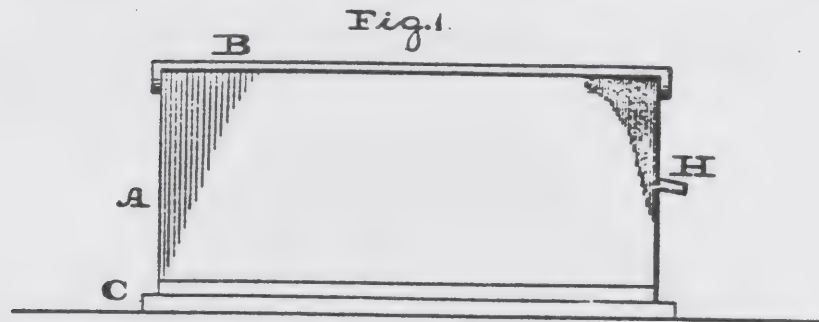
PRICE, Plain, \$2.00 & Silver Plated, \$3.00.

605 Walnut St., Philad'a.

E. KRONENBERG.
COUNTERFEIT COIN DETECTORS

No. 195,451.

Patented Sept. 25, 1977.



Witnesses:
Lewis F. Brown,
Robt. P. Grant.

Inventor:
E. Kronenberg,
by *John A. Dadersheim,*
Attorney.

UNITED STATES PATENT OFFICE

EDWARD KRONENBERG, OF PHILADELPHIA, PENNSYLVANIA,

ASSIGNOR TO HORACE BALDWIN, OF SAME PLACE.

IMPROVEMENT IN COUNTERFEIT-COIN DETECTERS.

Specification Forming part of Letters Patent No. 195,451, dated September 25, 1877; application filed March 2, 1877.

To all whom it may concern:

Be it known that I, EDWARD KRONENBERG, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Counterfeit-Coin Detectors, which improvement is fully set forth in the following specification and accompanying drawings, in which-

Figure 1 is a side elevation of the implement embodying my invention. Fig. 2 is a top view thereof. Fig. 3 and 4 are central longitudinal sections thereof. Fig. 5 is an end view thereof.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of a case having in its top plate two slots, of the gage of the coin, and an enclosed single balance, so constructed that the coins of different denominations may be weighed thereby, the spurious pieces being detected by their inability to materially depress the balance and roll therefrom.

It also consists of a projecting arm for controlling the balance, so that the spurious coin may be readily removed from the case.

It also consists of guides depending from the top plate of the case below one or both of the slots thereof, whereby the spurious coin during the operation of removal will not catch under the top plate.

Referring to the drawings, A represents a case, consisting of sides A'A', top plate B', base C open end D, and slotted end E.

In the top plate B there are two slots, F, F', which are of different lengths, and adopted, say, for half and quarter dollars, and they extend end to end in the longitudinal direction of the case.

Within the case, below the top plate B, there is mounted a balance G, consisting of an elliptical-shaped or dishing bar, of such length as to project beneath both slots F, F', and so weighted or hung that the weight of either a half or quarter dollars applied through the respective slot and rested up on the bar will depress the balance.

PATENT NO. 195,451
[CHP. II : SEC. 2B]

[II-2B-5A]

PATENT NO. 195,451 - continued

It will be noticed that the portion a of the balance beneath the short slot F curves or extends slightly upwards, and the portion b, beneath the long slot F' curves downward, the free end of the balance being at the open side D, of the case.

On the weighted portion of the balance there is an arm, H, which is secured thereto or formed therewith, and it projects through the slotted end E of the case, so as to be readily handled.

From the top plate B, and beneath the walls of the slot F', there depend two vertically-extended bars, J, which flare, the widest part being below.

The operation is as follows: If a genuine half-dollar is placed through the slot F', or a genuine quarter-dollar through slot F, it will rest circumstantially on the balance, and it overcomes the latter, so as to cause it to descend and assume such position that the coin will roll therefrom and escape through the open end D of the case, whereby its genuineness is established, after which the balance returns to its original position.

Should a spurious half-dollar be placed on the balance, the latter will not materially descend, and the depression or downward curvature of the position b of the balance prevents the spurious piece rolling therefrom, whereby it projects sufficiently above the top plate to indicate its nature. The same is true of a spurious quarter-dollar, only that it will roll into the portion b of the balance and project upwards through the slot of the larger piece, the result and indication of which being similar to that stated of the larger piece.

In order to remove the spurious pieces the arm H will be held so as to render the balance immoveable, whereby said piece may be readily grasped by hand, or the arm will be raised, whereby the balance descends and the pieces roll therefrom through the opening D of the case.

It will be noticed that the same balance is employed for weighing coin of different denominations, the operation depending upon the introduction of the coin into the proper slot of the case.

As spurious pieces depress the balance to a limited extent, and they are liable to catch under the top plate, the bars J are employed to prevent the same, their service being to direct or guide the pieces into and tip through the slot F', whereby they are readily accessible.

It is evident that the slots F, F' act as gages to detect the genuine and spurious by their thickness and diameters.

PATENT NO. 195,451 - continued

I do not claim as my invention an independent or separate balance for each coin of different denomination.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is-

1. The case having a top plate formed with two slots, F F', of different lengths, and extending longitudinally end to end, in combination with a single balance G, projecting beneath both slots, and having an upwardly extending portion, and downwardly-extending portion b, substantially as and for the purpose set forth.
2. The case and balance, in combination with an arm, H, secured to the balance and projecting through the case, substantially as and for the purpose set forth.
3. The case with a slotted top plate and the balance, in combination with depending guiding-bars J, substantially as and for the purpose set forth.

E. KRONENBERG.

Witnesses:

JOHN A. WIEDERSHEIM,
H. E. HINDMARSH.

AUTHORS' COMMENT

Only one example of the device is known in the form patented. Its cast iron sides have *KRONENBERG'S PATENT* in raised lettering on one side and U and S in ligature with *COIN DETECTOR* on the other side. The S however is mirror-imaged. See IV-4-10.

In Chapter IV a much wider modified version is illustrated, providing for the coins to be inserted in horizontal position through circular openings on the top rather than through narrow slots in a vertical position shown on the patent drawings. The modified version on its brass top includes independent slots at right angles to the axis for gauging thickness rather than longitudinally placed insertion slots shown in the patent drawings. The top has *PAT APPD FOR*

U S (in ligature)
COIN DETECTOR

stamped upon it.

W. H. RICE.
Counterfeit-Coin Detector.

No. 196,168.

Patented Oct. 16, 1877.

Fig: 1.

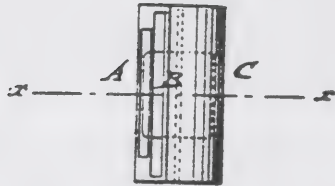


Fig: 2.

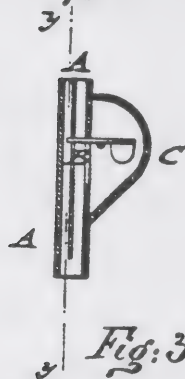


Fig: 3.

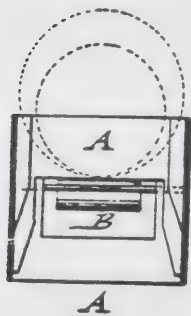


Fig: 4.

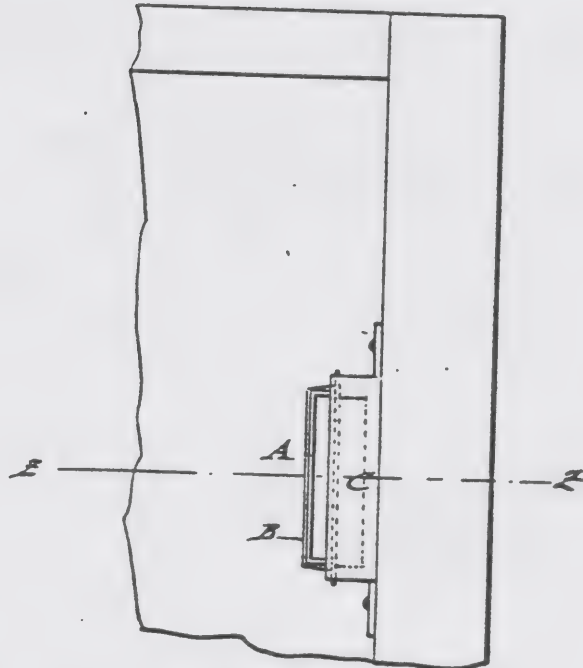
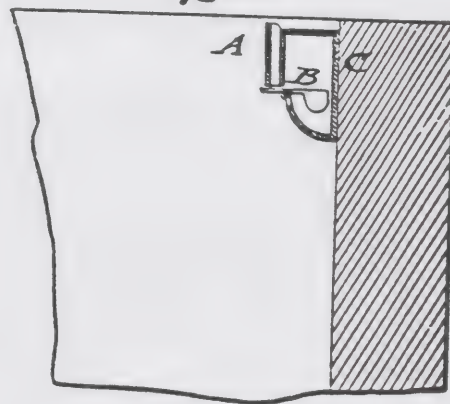


Fig: 5.



WITNESSES:

Chas. Rice
J. H. Scarborough

INVENTOR:

W. H. Rice
BY *Munnell*
ATTORNEYS.

UNITED STATES PATENT OFFICE

WILLIAM H. RICE, OF NEW YORK, N.Y.

IMPROVEMENT IN COUNTERFEIT-COIN DETECTERS

Specification forming part of Letters Patent, No. 196,168,
dated October 16, 1877; application filed April 23, 1877.

To all whom it may concern:

Be it known that I, WILLIAM H. RICE, of the city, county, and State of New York, have invented a new and Improved Coin-Tester, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a top view; Fig. 2 a vertical transverse section on line x x, Fig. 1; Fig. 3, a vertical longitudinal section on line y y, Fig. 2, of my improved coin-tester as adopted for pocket use; and Figs. 4 and 5 are top view and vertical transverse section of the same on line z z, Fig. 4, shown as applied to a money drawer, counter, etc.

Similar letters of reference indicate corresponding parts.

This coin-tester is intended to form a convenient, compact, and reliable device for pocket use, or for cash-tills, etc, by which the coins are exposed at one time and the same time to the double test of weight and measurement, so as to detect at an instant the counterfeit pieces without attracting attention to the testing of the same.

The invention consists of a coin-tester having one or more guide-tubes gaged in length and width for coins of different denominations, in connection with a fulcrumed and weighted trap-lever gage to the weight of the genuine coins.

In the drawing A, A represents the tubes for the coins, of which one or more may be arranged above a fulcrumed and weighted trip-lever, B, that extends across the bottom opening of the tubes.

The tubes A are gaged in length and width to the size of the special coins to be tested, and the weight of the trip-lever gaged to the weight of the coins, the tubes for the smaller coins being in front of the tube for the larger coin, so that the increased leverage compensates for the less weight of the smaller coins. The weighted trip-lever is enclosed in a casing, C, so as to be protected and not exposed to injury after being once adjusted. The tester is thereby capable of being carried in the pocket or attached by side flanges to a money-drawer, counter, or other receptacle. The coin to be tested is inserted into the proper tube, and then dropped, the genuine and full-weighted coin passing in without difficulty, and tripping instantly the weighted trip-lever, while the spurious coin, being either

PATENT NO. 196,168 - continued

too large, is prevented from passing through the tubes, or, when the same is capable of passing into the tube, it is too light to trip the trip-lever, on account of the less specific gravity of the baser alloy, forming thus a twofold test that detects with absolute certainty the counterfeit coins. The test may be used without attracting attention and giving offense to the parties offering the coins, which is of special advantage and less objectionable for use in the trades.

Having thus described my invention, I claim as new and desire to secure by Letter Patent-

A coin-tester consisting of a series of coin-tubes in which rests one arm of a lever weighted on the other, the coin of different denominations resting upon said arm at different distances from the fulcrum of lever, according to their respective weights, as shown and described.

WILLIAM H. RICE.

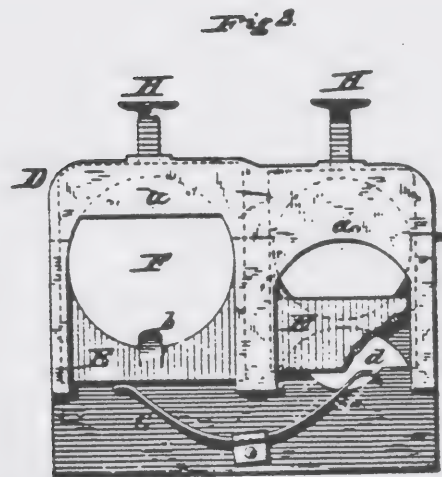
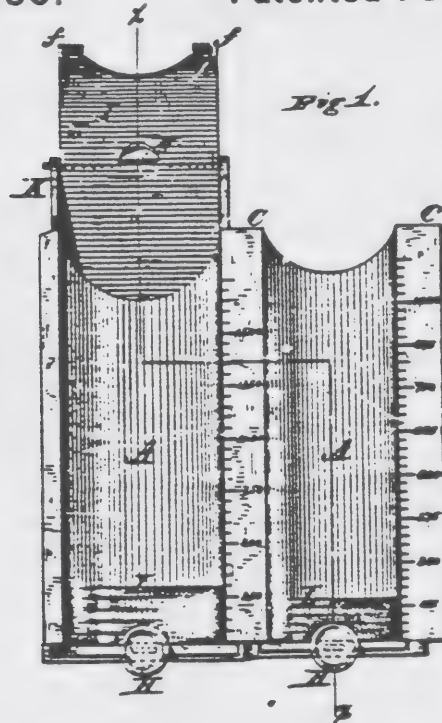
Witnesses:

PAUL GOEPEL,
C. SEDGWICK.

J. W. MEAKER.
Device for Receiving and Delivering Coin and
Detecting Counterfeit Coin.

No. 200,080.

Patented Feb. 5, 1878.



Witnesses.

Larry King
Jno. D. Patten.

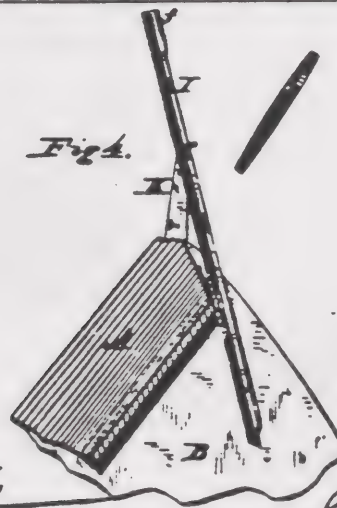
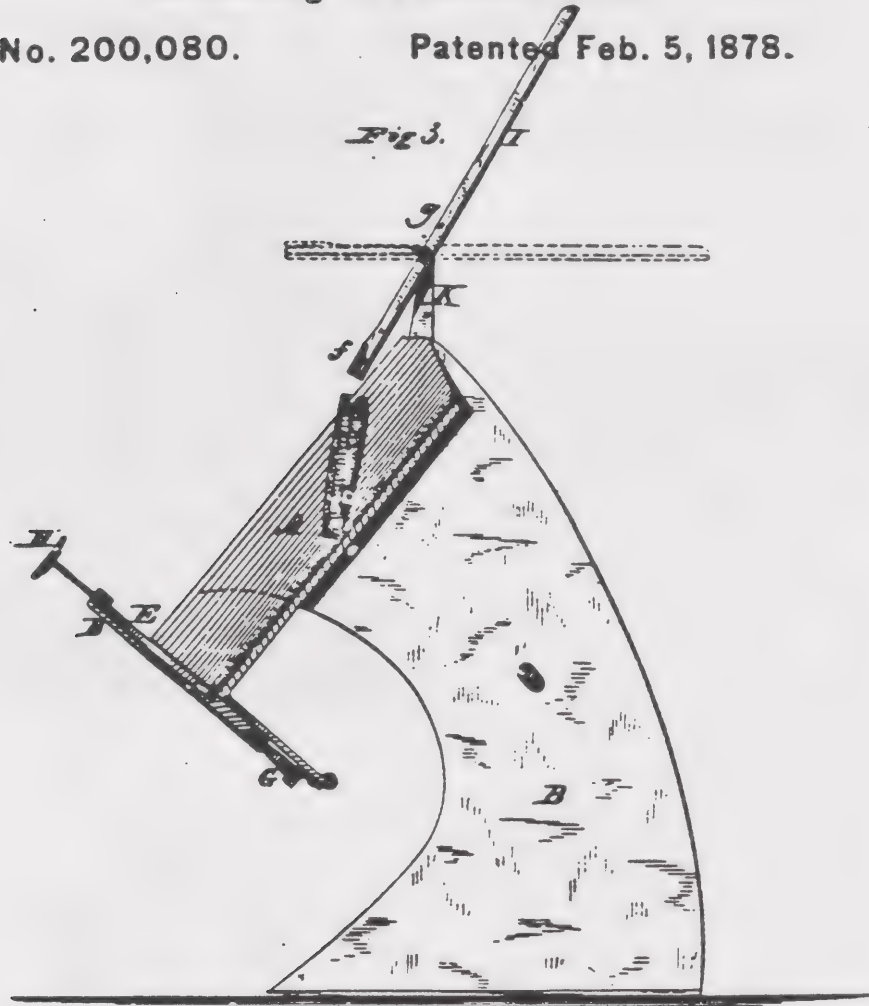
Inventor.

J. W. Meaker,
By his Attorneys,
Stansbury & Lunn.

J. W. MEAKER.
Device for Receiving and Delivering Coin and
Detecting Counterfeit Coin.

No. 200,080.

Patented Feb. 5, 1878.



Witnesses

Harry King
Jno. D. Patten,

Inventor.

J. W. Meaker
By his Attorneys
Stansbury & Lunn

UNITED STATES PATENT OFFICE

JOHN W. MEAKER OF CHICAGO, ILLINOIS, ASSIGNOR OF
TWO-THIRDS HIS RIGHT TO HARVEY B. MERRELL,
OF MORRISTOWN, NEW JERSEY, AND THOMAS FERGUSON,
OF DETROIT, MICHIGAN

IMPROVEMENT IN DEVICES FOR RECEIVING AND DELIVERING
COIN AND DETECTING COUNTERFEIT COIN.

Specification forming part of Letters Patent No. 200,080, dated
February 5, 1878; application filed December 24, 1877.

To all whom it may concern:

Be it known that I, JOHN W. MEAKER, of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful improvement in Apparatus for Receiving and Delivering Coin and Detecting Counterfeit; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification, in which-

Figure 1, sheet 1 is a front view; Fig. 2, Sheet 1, an end view; Fig. 3, Sheet 2 a vertical section on the line x x of Fig. 1; and Fig. 4, Sheet 2 a vertical section, on the line x x, of a portion of Fig 1, with the position of the detector changed.

The object of my invention is to provide a coin-counterfeit detecting device, and to combine it with a novel device for receiving and delivering coin in such a manner that genuine coin only may be received and paid out, the whole being useful to all persons receiving and paying out coin, and especially when it necessary to make change rapidly.

In the drawing, A represents a longitudinal semicircular section of a tube, forming a trough, made of suitable material, and having a diameter of the size requisite for the size or denomination of coin, L, placed therein. These troughs or coin-receptacles are mounted upon any suitable frame, B, and arranged so as to stand at an angle of about forty-five degrees with a horizontal line, as clearly shown in Fig. 3. Their edges are marked into spaces equal to the thickness of the coin, L, placed in them. These spaces may be divided into groups, numbered by figures, arranged decimally or otherwise, so that the quantity of coin in the receptacle may be seen at a glance. The lower end of each trough is provided with a stationary frame, D, in which a gate, E, having a circular opening, F, of the same size with that of the coin, is arranged to slide vertically, as shown in Fig. 1, 2 and 3. The gate E is held up by a spring, G, so that the opening therein may be on line with the circular edge of the trough, so as to permit the bottom or lower end coin to pass into the opening, where it is prevented

PATENT NO. 200,080
[CHP. II : SEC. 2B]

[II-2B-10B]

from falling through by the cross-piece of the frame at a, opposite the opening in the gate on the upper side, by a lip, b, or cross-piece c, attached to the lower side of the gate, as shown in Figs. 1 and 2.

In the rear side of the frame D, and directly under the lower end of the trough, an opening, d, is provided, as shown in Figs. 2 and 3, for a purpose hereinafter mentioned. To the upper side of the gate is attached a thumb-piece, H, for pressing down the same, as shown in Figs. 1, 2, and 3. A piece of sheet metal, I, with its side edges turned up so as to form flanges on the same, leaving a space between them equal in width to the diameter of the trough or the coin therein, and having the flanges at one end turned over to form gage-lips f, and having a stop, g, projecting upward midway between the flanges, is hung between arms K, as shown in Figs. 3, and 4, and is so balanced as to operate as hereinafter described.

The operation of this entire apparatus is as follows: The troughs or semi-circular cylinders A are filled with genuine coin. Their genuineness, in case of doubt, is tested by means of the detector. When, in the process of filling the semicircular cylinders, a piece is suspected of being counterfeit or light weight, the detector I is placed in a horizontal position, as shown by the dotted lines in Fig. 3; then the suspected piece is entered between the lips f, and if the thickness and diameter of a genuine coin, it will just fill the space between the lips, pass through, and rest against the stop g. If not of the proper thickness and diameter, it will not fit the space and is rejected. Should it pass this test as to thickness and diameter and rest against the stop g, the detector still being held suspended in a horizontal position, the coin will, if of proper weight, be delivered automatically forward into the receiving-trough in front, as shown in Fig. 3, but if too light will be automatically thrown backward and rejected, as shown in Fig. 4. When the trough is thus provided with genuine coin, the number in it at any time will be shown by the figures on the sides, and when one or more pieces are wanted to be delivered, it is only necessary to press down upon the thumb-piece, which forces down the gate, carrying with it a single coin, which as its upper end passes below the upper supporting cross-piece a, falls forward and outward into the hand of the operator. The release of the coin is rendered absolutely certain by the opening d, (shown in Fig. 2,) which allows the lower end of the coin to tilt back as the upper end falls forward. As soon as one is delivered, by releasing the gate from pressure, it is forced back by the spring to its original position, and is ready to deliver another, and so on.

By having a number of receptacles or troughs corresponding with the size of the different kinds of coin- as dollars, half-dollars, quarter-dollars, ten, five, three, two, and one cent pieces arranged side by side, and provided by these devices, they may be easily filled with genuine coin, and any fractional part of a dollars desired in making change may be quickly, readily, and conveniently counted and delivered, thus providing a device of

great utility for all parties having constantly to make change.

Having thus described my invention. what I claim is-

1. A coin receiving and delivery apparatus. consisting of a semicircular receptacle, A, gate E, frame D, and spring G, constructed as described, and arranged to operate as set forth.
2. In combination with a coin receiving and delivering device, as herein described, the suspended metallic plate I, having lips f thereon, forming a gage to test the thickness and diameter of coin, with stop g, for holding the same in such position that if of the proper weight it will be delivered automatically to the receiver, but if not, then be automatically rejected, as herein shown and set forth.
3. In combination with the semicircular receptacle A, the gate E and frame D, provided with the opening d, for securing the certain delivery of the coin, as set forth.

In testimony that I claim the foregoing as my own I affix my signature in the presence of two witnesses.

JOHN W. MEAKER.

Witnesses:

HENRY B. MUNN.

CHAS. H. FERGUSON.

S. A. FIELD.

Counterfeit Coin Detector and Coin Receiver.

No. 203,719.

Patented May 14, 1878.

Fig. 1.

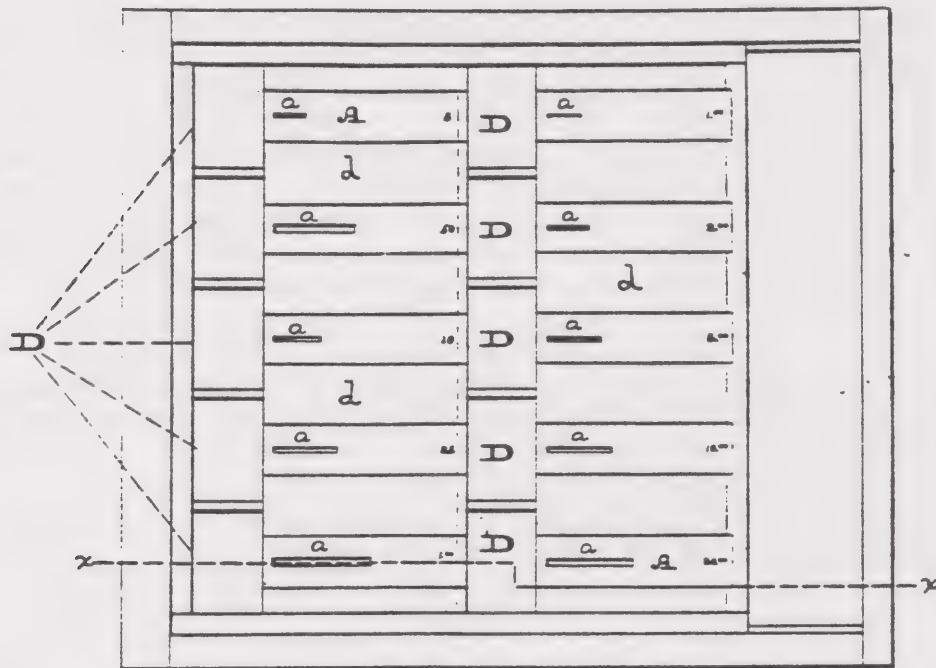
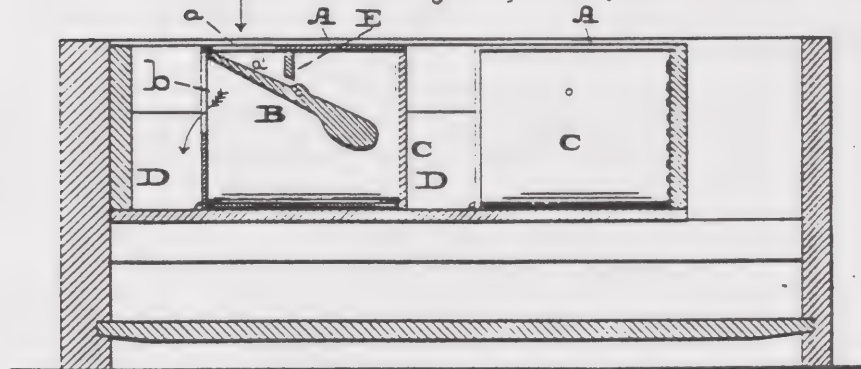


Fig. 2.



Witnesses:

Re P. Grant,

W. T. Kitcher

Inventor:

Saml. A. Field,

by John A. Diederichs,

ATTORNEY.

UNITED STATES PATENT OFFICE

SAMUEL A. FIELD, OF PHILADELPHIA,
PENNSYLVANIA.

IMPROVEMENT IN COUNTERFEIT-COIN DETECTOR
AND COIN RECEIVER

Specification forming part of Letter Patent No. 203,719,
dated May 14, 1878; application filed March 1, 1878.

To all whom it may concern:

Be it known that I, Samuel A. Field of the city of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Counterfeit-Coin Detector and Cash-Receiver, which improvement is fully set forth in the following specification and accompanying drawings, in which-

Figure 1 is a top or plan view of the device embodying my invention. Fig. 2 is a vertical section thereof in line x x, Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

My invention consists of coin-detectors for various denominations, in combination with boxes, receptacles, or apartments, so arranged that each genuine coin may be deposited in its respective box, thus providing means of detecting spurious coin and collecting the genuine coin, each denomination by itself.

Referring to the drawings, A represents a series of coin weighers or detectors, which are properly supported in a drawer or on a counter, table, or elsewhere, said detectors being for various denominations, and consisting generally of weighted poises, each enclosed within its own case C, having an inlet-throat a, and a discharge-throat, b. The genuine coin admitted to the poise through the throat a will depress said poise, and then roll therefrom through the throat b, whereby it is discharged from the case C and its genuineness indicated. The spurious coin will not materially depress the poise, and this act will expose the nature of the coin.

These features are old and no invention exists therein.

D represents boxes, receptacles, or apartments, each being arranged in relation to the discharge-throat of one of the coin-detectors, so that as the genuine coin leaves said throat it will fall into said box. Should the detectors be placed on a table or counter, the boxes D may be beneath same, in which case openings will be made in the top of the table or counter for directing the coin from the detectors to the boxes.

PATENT NO. 200,719 - continued

It will be seen that spurious coin may be readily detected, and genuine coin will fall into the proper receptacles or boxes. Between the case C there are blocks b, which support the detectors and enlarge the space necessary for the receiving-boxes.

As there is a detector for each coin most in circulation and a box or receptacle for each detector, it is evident that coin of each denomination will be collected by itself, thus preventing confusion in making change or counting the cash received, and presenting other advantages will be readily appreciated by the store-keeper, clerk, cashier, or other receiver of the money.

Depending from the top plate of the case of the detector, adjacent to the inlet-throat a, is a bar E, which projects towards the poise, so as to occupy a position between the axis and central portion of the outer end of the poise.

It will be seen that, when a coin is inserted in the throat a and dropped on the right-lined face-poise a', the bar E prevents the coin rolling toward the axis of the poise, whereby, as the coin is thus directed to the proper part of the poise, the action of the latter is unfailing and reliable in indicating genuine and spurious pieces.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is-

The combination coin-detector and cash-receiver, the same consisting of a series of coin-detectors for various denominations, each inclosed in its own case, and separated by blocks d, in combination with a series of boxes D, arranged side by side in front of the outlet-throats of the detectors, all as set forth.

SAMUEL A. FIELD.

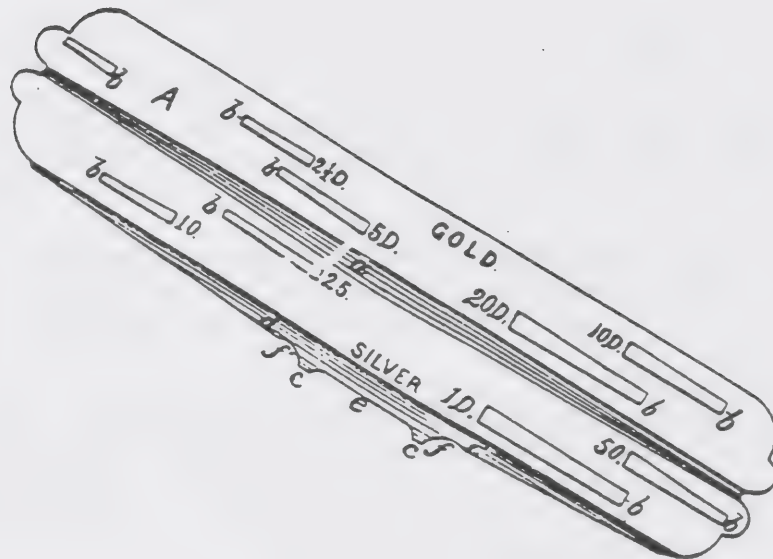
Witnesses:

JOHN A WIEDERSHEIM,
H. E. Garsed.

J. A. THOMPSON.
Counterfeit Coin Detector.

No. 224,807.

Patented Feb. 24, 1880.



WITNESSES.

Wm. J. Mumma
Chas. H. Wood

INVENTOR.

John A. Thompson
By Bradley & Co
Attys.

UNITED STATES PATENT OFFICE
JOHN A. THOMPSON, OF CHICAGO, ILLINOIS
COUNTERFEIT-COIN DETECTOR

SPECIFICATION forming part of Letter Patent No. 224,807.
dated February 24, 1880. Application filed January 13, 1880.

To all whom it may concern:

Be it known that I, JOHN A. THOMPSON, of Chicago, in the county of Cook and state of Illinois, have invented certain new and useful Improvement in Counterfeit-Coin Detectors; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing, forming a part thereof, and in which the figure represent a perspective view of a counterfeit-coin detector embodying my improvements.

The object of my invention is to provide a device that will readily and surely detect counterfeit from genuine coin; and my invention consists in the construction of the device or detector, as hereinafter described and claimed.

It is well known that when a coin is made wholly or in part of base metal it is lighter than the genuine coin of the same size, and if made of the same weight it must necessarily be thicker or larger in diameter than the genuine coin.

In the drawing, A represents a plate of sheet metal of known gage and weight, preferably of brass or German silver, and may be of any desired dimensions, which is first stamped from a flat piece of metal, and its depending or tapering sides or flanges afterward formed as shown, so as to form the fulcrum for the plate.

In the center of the plate, and running from end to end, is a stuck-up rib, a, which stiffens and strengthens the plate and divides it into two parts, one side of which is marked for gold coins and the other for silver. On either side of the rib a is a series of slots or perforations, b, each of which is of the same width for about one-third of its length, and then gradually increases in width, so as to form a tapering slot towards the fulcrum of the plate, said slot being of a width sufficient to receive and hold the coin of the desired denomination without allowing it to pass wholly through.

Each of the slots b is made wider at its end nearest the fulcrum of the plate, so as to readily receive the coin, while its other end is made of a width corresponding to the thickness of the coin, so that when a genuine coin is placed and held within the slot corresponding to its denomination

PATENT NO. 224,807
[CHP. II : SEC. 2B]
[II-2B-15A]

PATENT NO. 224807-continued

it will cause the plate to tip down over the fulcrum c nearest to such coin, the fulcrum c being previously adjusted for that purpose. If the coin is made thicker than and so as to correspond in weight with the genuine coin it will not pass within the desired slot to its proper place, and will, consequently, fail to tip the plate on its fulcrum.

It will be observed that the flanges d are made tapering from at c r, about their fulcrums to their ends, and that the plate A is provided with two fulcrums, c which are formed out of and as a part of the flanges d. The space e between the fulcrums c need not necessarily be cut out, and the notches f may be filled away (more or less) for the purpose of adjusting the fulcrums to the plate.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is-

1. Is a counterfeit-coin detector, the plate A, provided with the tapering slots b, substantially as shown and described.
2. In a counterfeit-coin detector, the plate A, provided with tapering slots b, tapering flanges d, and the fulcrums e, substantially as shown and described.
3. In a counterfeit coin detector, the plate A, provided with rib a, tapering slots b, tapering flanges d, and fulcrums c, substantially as shown and described.

JOHN A. THOMPSON

Witnesses:

WM. ZIMMERMAN,
N. COWLES.

AUTHORS' COMMENTS

This is the third of the Thompson patents and again its simplicity of design and construction is to be noted. The detector shown in the photograph in Chapter IV has noted thereon the following information:

"---- THOMPSON'S
INSTANTANEOUS COUNTERFEIT DETECTOR
PAT. APL.3.77
IMPROVED JAN.5.78
PAT. FEB.24.80

What the original detector looked like, and what the January 5, 1878 improvements were is not known to the authors. The photograph is of a detector made of nickel plated brass.

PATENT NO. 224,807
[CHP. II : SEC. 2B]
[II-2B-16]

J. T. McNALLY & W. H. HARRISON.

No. 12,795.

Patented Feb. 28, 1882.



WITNESSES:

St. Louis Mo. April 10
6. 1892



INVENTOR:

88

ATTORNEYS.

UNITED STATES PATENT OFFICE

JAMES T. McNALLY AND WALTER H. HARRISON, OF NEW YORK, N.

DESIGN FOR SCALES

SPECIFICATION forming part of Design No. 12,795,
dated February 28, 1882

Application filed January 6, 1882. Terms of patent 7 years.

To all whom it may concern:

Be it known that we, JAMES T. McNALLY and WALTER H. HARRISON, of the city, county, and State of New York, have invented a new and Improved Design for Scales, of which the following is a full, clear and exact description.

Reference is had to the following drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both figures.

In the drawings, Figure 1 is a plan view, and Fig. 2 is a side view, of our newly designed scale.

A represents the beam, and B its supporting-base, a, is a portion having parallel sides and b, a portion having tapered sides, rounded end, and rounded at the vertices of the angles. c is a depending rib or flange on the underside of the beam. The whole presents an ornamental appearance to the eye. The base B is elongated in the direction of the length of beam A, and is widened at its mid-length by rounded side extensions, d, at which place it is also formed with vertical flanges c, c, for supporting the beam.

Having thus described our invention, we claim as new and desire to secure by Letters Patent-

The design for scales shown and described, which consists in the oblong base B, having side extensions, d, and flanges c.

JAS. T. McNALLY.
W. H. HARRISON.

Witnesses:

GEO. D. WALKER,
C. SEDGWICK.

PATENT NO. 224,807
[CHP. II : SEC. 2B]

[II-2B-17A]

DESIGN NO. 12,795 - continued

AUTHORS' COMMENT

This counterfeit coin detector, patented February 28, 1882 was one of the most confusing to track down in the Patent Office because it was not listed under any of the basic categories for either scales, coin testers or counterfeit coin detectors. It was purely by accident that it was discovered by the authors as a Design item. For many years it was known from existing examples that a "J. T. McNALLY, INVENTOR" had such an item for sale but there was no mention of the name McNALLY in the Patent Office. We now know through the design documents in the Patent Office that he and a W. H. Harrison were the co-designers of this device. The illustration and data in Chapter IV show several different varieties of this detector.

(No Model.)

J. B. ATWATER.
COUNTERFEIT COIN DETECTOR.

No. 264,431.

Patented Sept. 19, 1882.

Fig. 1.

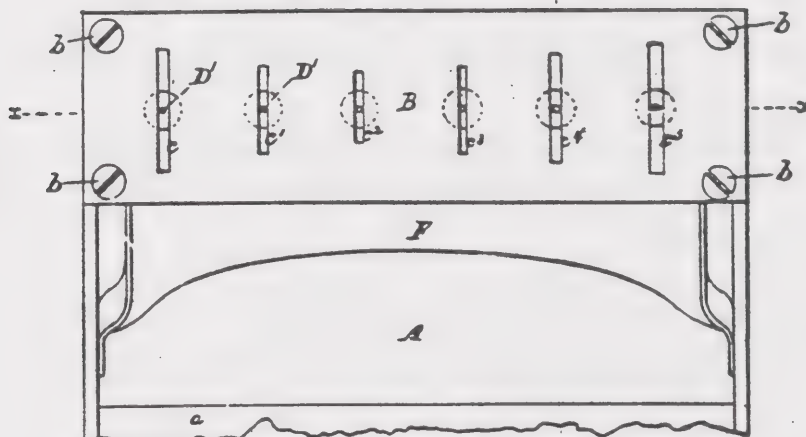


Fig. 2.

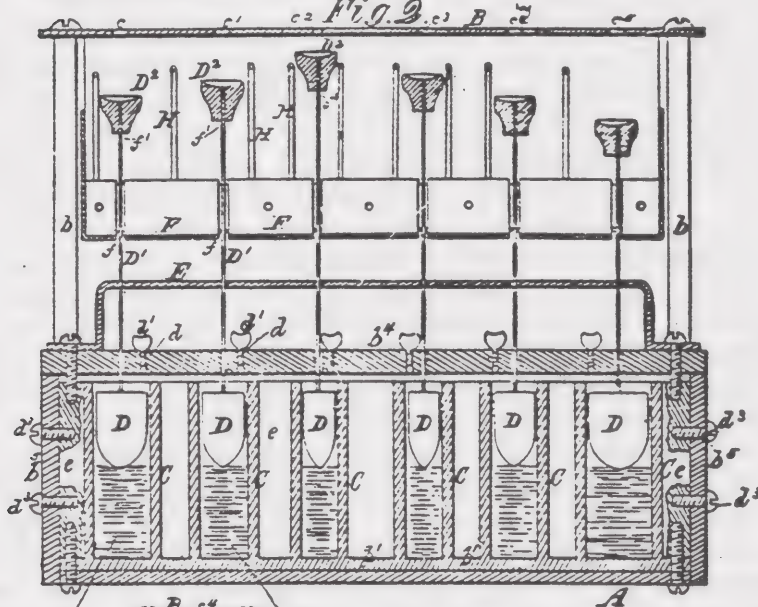
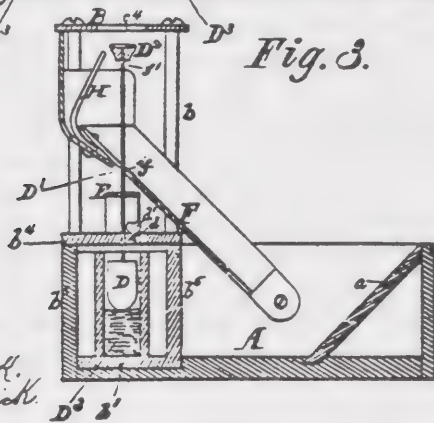


Fig. 3.



Witnesses:

Robt. L. Fennell.
B. Carlyle Fennell.

Inventor:

John B. Atwater
by his Atty.
Fennell and Fennell

CHAPTER II
UNITED STATES PATENTS

SECTION 2C

UNITED STATES PATENT OFFICE

JOHN B. ATWATER, OF CHICAGO, ILLINOIS.
COUNTERFEIT-COIN DETECTOR.

SPECIFICATION forming part of Letters Patent No. 264,431, dated
September 19, 1882. Application filed May 19, 1882 (No Model)

To all whom it may concern:

Be it known that I, JOHN B. ATWATER, a citizen of the United States, residing at Chicago, in the county of Cook and state of Illinois, have invented a new and Improved Counterfeit-Coin Detector, of which the following is a specification.

My invention relates to a machine which determines the genuineness of coins by measuring and weighing the same; and the nature of my improvements consists, first, in the combination of a series of tight cylinders or other shaped vessels supplied with quicksilver through a suitable plugged aperture, a series of weighing-trays mounted at different altitudes upon suitable guide-stems, of a series of conical or other suitably-shaped floats which rest upon the quicksilver within said vessel, and a measuring table or plate provided with a series of slots of a length and width corresponding respectively to the diameter and thickness of the respective standard coins of the United States or other countries, this combination being such that the float-stems which support the weighing-trays hold the trays while empty at different distances below the horizontal plane of the slotted measuring-table, such relatively different distances being in accordance with the different diameters of the coins, while the amount of float-surface which is immersed in the quicksilver will be in proportion to the respective diameters and weights of the different coins placed upon the respective trays through the respective slots of the table; second, in a combination of the slotted measuring-table, overhanging rods for properly directing the descent of the coins after they are weighed, an inclined conducting apron, vertically rising and descending trays applied on guided float-stems, and cylindrical vessels supplied with a fluid which retards the descent of the floats, and a coin-receiving box; and, third, in the combination of trays made adjustable on float-stems with vessels containing quicksilver, whereby, in the event of any material change occurring in the density of the quicksilver from the effects of temperature, the same may be compensated for by adjusting the altitude of the trays on the float-stems.

In the accompanying drawings, Figure 1 is a broken top view of the improved counterfeit-coin detector; Fig. 2 is a vertical section in the line

PATENT NO. 264,431
[CHP. II : SEC. 2C]

[II-2C-1A]

x x of Fig. 1, and Fig. 3 is a vertical section in the line y y of Fig. 1.

In said drawings, A represents a coin-receiving box, of rectangular or other shape, and having the forward portion of its bottom inclined, as at a, so as to cause the coins, after they are measured and weighed and caused to descend, to slide properly down upon the flat portion of the bottom of the box, and also to facilitate the removal of the coins from the box.

B is a measuring table or plate mounted upon standards b of the box. The plate is a sufficient distance above the box to allow the weighing mechanism to operate properly. Through the table or plate B a series of slots, c c¹, c², c³, c⁴, c⁵, are cut transversely of its length, and these slots are of a diameter and width respectively corresponding to the diameter and thickness, respectively, of twenty-dollar, ten-dollar, and five dollar gold pieces, and one-dollar, fifty-cents, and twenty-five cent silver pieces, which pieces are of standard size and weight, those lettered c c¹ c², c³ being for gold pieces and those c³, c⁴, c⁵ silver pieces. The slots will only admit through the table or plate coins of standard size having a standard weight. Therefore, if a counterfeit coin of full weight is brought over either of the slots, its thickness or diameter will prevent it from passing through the slot. By this means counterfeit or alloyed coins of full weight are detected; but if the coin should be of less weight than the established standard they would be passed through the slots in the table, and hence the weighing mechanism now to be described is combined with the measuring table or plate.

The weighing mechanism which I have devised, and believe to be more accurate than a vibrating weighted beam, is as follows: A series of tight cylindrical vessels, C, of varying diameter and capacity, supplied with quicksilver through apertures d, closed by screw-plugs d', are cast upon a base-plate b', and connected and stayed by a web, e, and, if necessary, by the whole inclosed by outer walls, b⁵. These cylinders are placed within the coin-box A, directly under the slots of the plate or table B, secured in position by screws d², as shown. The upper end of the cylinders are closed by a cap-plate, b⁴, in which the apertures d and hole for the stems of the floats to move are provided. Within these vessels cone-shaped floats D, which are respectively of little less diameter than the respective cylinders, are arranged so as to rest in their normal position upon the quicksilver D³ as illustrated. The floats may be either of iron, steel, glass, ivory, hard rubber, or wood, or any other material to which the quicksilver will not adhere or by which it will be absorbed. The respective displacing surfaces of these floats are to be proportioned to the diameter and weight of the coins to be weighed, as illustrated in the drawings. The floats are attached to stems D', which pass up through a guide-bar E, and through slots f of the coin-box and connected to a back plate of the table B, as illustrated. On the upper ends of the stems weighing-tray D² are fitted by means of screw-threads F', so that they can be raised or lowered according to the necessities of the case. The trays are arranged centrally

under the slots of the measuring plate or table, and they stand respectively at such altitudes as will adapt them for weighing the different standard coins. In setting the trays for operation they may stand so as to require about one-half of the diameter of the respective coins to be passed below the surface of the table in order to rest the coins upon them, and the movement of the trays downward should be sufficient to allow the entire diameter of the respective coins to pass below the under side of the table or plate. This adjustment can be attained by making the stems of the floats for the different coins of different lengths and proportioning the diameter and capacity of the cylinders and the diameters and fluid-displacing surfaces of the floats with respect to the different coins to be weighed. By the use of quicksilver for the purpose described the great weight thereof is made available for keeping a portable counterfeit coin-detector steady while in use.

The inclined coin-conducting apron F is provided at its upper end with a series of separated overhanging directing-rods, II, which are arranged in close relation to the trays D²- one on each side of a tray- and they serve for properly directing coins downward upon the apron as soon as they descend below the under surface of the table or plate B.

In operating with this invention the coins are placed by hand edgewise through the slots of the table B, and as soon as they rest on the trays they are released, when, if of the standard size and weight, they depress the tray, stem, and float, so as to pass entirely through the table and descend upon the apron into the box, being directed by the overhanging rods; but should any one of the coins be less than standard weight, or a counterfeit, it will remain in the slot, either in consequence of its not being capable of depressing the tray, stem, and float upon which it is resting, or because its bulk has been so increased, in order to give it sufficient weight, by a baser metal than either gold or silver that it cannot pass through the slot. Thus whether a coin is too light, and yet of standard metal, or too large on account of its being made heavy enough by metal not of standard character, the fact will be detected.

In the event of any variation in the operation of the weighing mechanism occurring from changes in the height of the quicksilver in the cylinders, the same can be regulated by adjusting the trays up or down on the screw threaded ends of the float-stems.

The great advantage in my weighing mechanism lies in the trays moving straight up and down against the quicksilver, also it is being very compact and regular in its operation. The quicksilver, offering great resistance and yet capable of flowing freely, admits of the machine being made quite small, yet capable of weighing the larger as well as the smaller standard coins with great accuracy, and the combination of a table with slots only adopted for coins of standard size with the weighing mechanism described enables the machine to arrest bogus coins and also coins of standard metal

but not of standard weight.

What I claim as my invention, and desire to secure by Letters Patent is-

1. A coin-detector comprising in its construction a series of tight cylinders of relatively different diameter and capacity for containing a weighing-fluid - such as quicksilver, for instance - a series of weighing-trays mounted at different altitudes upon the stems of a series of floats having respectively different amounts of fluid-displacing surface and being properly guided, and a measuring-table having slots corresponding to standard coins, substantially as and for the purpose described.
2. A coin-detector comprising a slotted measuring-table, overhanging directing-rods, an inclined conducting-apron, vertical-moving trays applied on guided float-stems, cylindrical vessels supplied with a fluid which acts against the floats in their descent, and a coin-box, substantially as described.
3. In a counterfeit-coin detector, floating trays which are adjustable by screw-threads on their stems, and vessels containing quicksilver, substantially as and for the purpose described.

JOHN B. ATWATER.

Witnesses:

CHAS. K. NICHOLS,
GUSTAVE TIDHOLM.

AUTHORS' COMMENT

It will be noted from the first drawing submitted with the patent application that no model was submitted with the application. This appears to be an extremely complicated device and to the best of the authors' knowledge, no example of this invention is extant.

(Model.)

M. CLARKE.
COIN TESTER.

No. 273,667.

Patented Mar. 6, 1883.

Fig. 1.

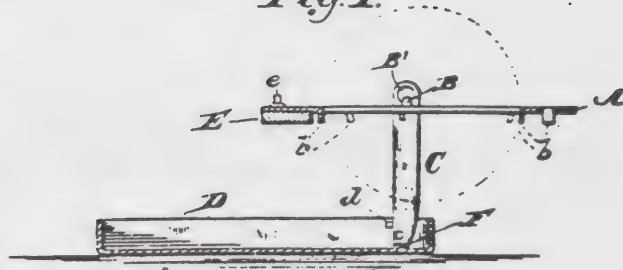


Fig. 2.

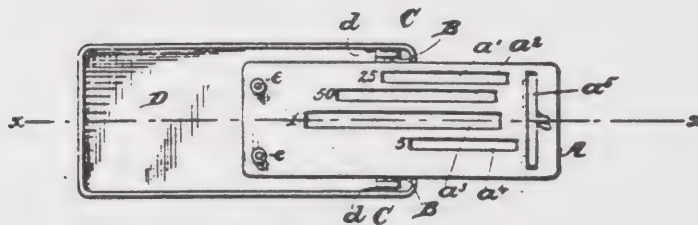


Fig. 3.

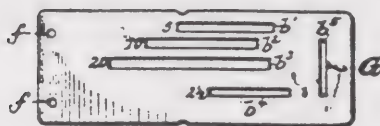
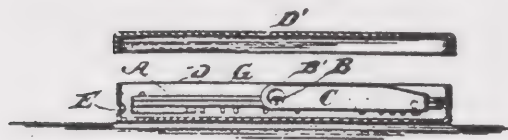


Fig. 4.



Witnesses

Robert Emmett,
John S. Downey

Inventor

Merritt Clarke.

By *Chas. B. Fildes*

Atty.

UNITED STATES PATENT OFFICE

MERRITT CLARKE, OF POULTNEY, VERMONT

COIN-TESTER.

SPECIFICATION forming part of Letters Patent No. 273,667.
dated March 6, 1883. Application filed March 10, 1881. (Model)

To all whom it may concern:

Be it known that I, MERRITT CLARKE, a citizen of the United States, residing in Poultney, in the county of Rutland and State of Vermont, have invented certain new and useful Improvements in Instruments for Detecting Counterfeit Coin, of which the following is a specification.

My invention relates to certain improvements in apparatus for determining the value and genuine character of coin by measurements of thickness, diameter, and weight.

To this end my invention consists, first, in a coin-balance suspended by bearings from folding standards or supports in such a manner that both may fold into the same horizontal plane, and thereby be so far reduced in size as to be easily portable both standards and balance being received by or contained in a suitable inclosing box or similar device; secondly, in a supplemental balance-plate calculated for testing gold coin only, which is so constructed that it may be applied to or detached from the balance supports; third, in a novel arrangement of the measuring and coin-supporting slots, whereby economy of space and material diminution of the balance-weight is effected.

Referring to the drawings forming part of this application, Figure 1 is a longitudinal section. Fig. 2 is a plan view. Fig. 3 is a plan view of the balance-plate for gold coin detached. Fig. 4 is a central longitudinal section taken in the plane x x, Fig. 2, showing the manner in which the several parts are folded.

A in said drawing indicates a flat metallic plate, which may be constructed of brass, copper, or any other suitable metal, and of desired dimension, although I have found by experience that a plate having a length of two and one-half ($2\frac{1}{2}$) inches and a breadth of seven eighths ($\frac{7}{8}$) of an inch will fully answer the purpose. In such a plate I formed slots longitudinally arranged, but of varying length and width, as shown at a^1 , a^2 , a^3 , and a^4 , Fig. 2, together with a transverse slot, a^5 , to receive and measure silver coin of the several dimensions, as well the nickel piece having a value of five (5) cents. These slots are cut with such accuracy so as to afford a conclusive test with of genuine coin, so far as the diameter and thickness of said coin is concerned, the length of each slot being such that it will admit a genuine coin until the upper edge or surface line of said slot shall cut the central point of the coin introduced, and thereby

PATENT NO. 273,667
[CHP. II : SEC. 2C]

[II-2C-5A]

test its diameter, while at the same time its thickness is measured by the width of the slot. Each slot formed in the plate is provided at its ends with short lips or tongues $b\ b$, turned down from the metal of the plate a and depending from its underside. These lips are bent slightly towards each other in such a manner as to grip the edges of the coin at the point where the surface-line of the slot cuts through the center of said coin, the latter thereby being supported in place until its weight is determined.

The plate A is provided with bearings $B\ B$, projecting from its sides at a point a little to one side of the center of said plate. These bearings are provided with knife-edges, and are received and supported by standards $C\ C$, each having a recess B' , formed in its extremity, and adopted to receive the journal or fulcrum bearing the plate A . These standards C, C are pivotally attached to a platform, D , which may be made in the form of an open box of shallow depth, as shown, or in any other suitable style of construction. As the point of attachment of said standards is at or near one end of the support D , it is evident that by simply the pivoted standards down they may be folded, together with the balance-plate which lies between them, into substantial parallelism, and be thereby caused to lie within the support D , as shown in Fig. 4.

To one end of the plate A is attached a small weight, E , which serves to balance the coins as they are individually introduced. It is attached to the plate by riveting, and serves as a test-weight for the coins of all the denominations now in use. It will be noticed that, with a single exception, the longitudinal slots in the plate A pass the fulcrum-bearings B, B , each one of the three larger openings - viz, a' , a^2 and a^3 - lying partly upon one side and partly on the other side of said bearing points. It is evident, therefore, that when a coin is placed in any one of said openings a certain portion of said coin will counterbalance an equal portion of the same coin lying upon the opposite side of the fulcrum-point. By this arrangement it will readily be seen that a part only of these coins will be balanced by the weight E ; but with ordinary accuracy in construction this test may be made extremely delicate, being even more sensitive than it would be if the entire weight of each coin were to be counterbalanced by a corresponding test-weight upon the opposite end of the plate. A convenient construction is to make the supporting-platform in the form of a shallow, box which may be provided with a cover, so that the entire device may, when folded, be enclosed by and carried in the vest-pocket or, if desired, may be permanently set on office desk or counter, as shown in Fig. 1. In any form of construction it is necessary that the standards, when unfolded, shall occupy substantially a vertical position, in order that they may not be struck by the balance-plate as it vibrates. In order, therefore, to determine the proper position and to retain the standards there, I employ the following construction: Said standards $C\ C$ are connected at their lower ends by a plate, F , by which they are held in parallelism, said standards being so pivoted to the box that the plate F swings just above the floor thereof, the arrangement of the parts being such that as the standards are

folded or unfolded its lower edge has friction upon the floor of the support D. This prevents the accidental dropping of the standards; and in order to determine their vertical position and to more efficiently retain them therein I may form with a small punch a burr, d, in the vertical sides of the box D, each burr being so situated that when the standards are in a vertical position their edges are just clear of said burrs, as shown in Fig. 1 and 2. These burrs therefore serve both to determine the proper position of the standards as well as to sustain them more effectually in such position, sufficient friction being produced by the contact of the standards by said burrs to prevent their folding until sufficient pressure is given to overcome said friction.

The apparatus as thus described is adopted for testing silver coin and nickels only. To adopt it for use in testing gold coin, I provide a thin removable or supplemental plate G, (illustrated in Fig. 3) which in essential respects is very similar to plate A. Openings in the plate G are especially adapted, however, to testing gold coin of the several standard denominations, and the whole is so constructed that it may be laid upon the balance plate A, and adjusted in proper position. When so placed the slots in the plate G, so far coincide with the openings in the plate A that coins placed in the former will pass down freely through the latter, the openings in the plate G, being of less dimension than those in the plate A. Moreover, the lips depending from the ends of the slots in the gold-testing plate will readily pass through the slots in the plate A, thereby allowing the former to lie flat upon the latter, it being held in proper position by pins or nipples e, e, which engage with small perforations f, f, in the plate G. It will be seen that as the same weight or counter-balance E is used for both metals the position of the openings in the supplemental plate must be somewhat modified to compensate for the difference in weight between gold and silver. This difference in relative position is much less, however, than would be supposed, and rendered practicable by the greater length of the openings in the plate A. The relative arrangement of the openings in the two plates is shown approximately in Figs. 2 and 3. It is evident that, instead of being adopted to lie upon the plate A, the gold testing plate G may be provided with bearings similar to the bearings B, B, and as the plate A, may be readily dismounted by springing the standards C, C, slightly apart the plate G, having such bearings, might be readily mounted in its place. In the end of each plate opposite the test-weight I cut a transverse slot, (shown at a³ in Fig. 2, and at b⁵ in Fig. 3) the former being adopted to receive and test the gold dollar.

The manner of using the apparatus is shown in Fig. 1, wherein the dotted lines indicate a genuine silver dollar placed in its appropriate slot. It will be seen that the length of said slot accurately gages the diameter of the coin, while its thickness is tested by the width thereof. At the same time the weight E counterbalances the preponderating portion of the coin upon the opposite side of the fulcrum-points, B, B.

It should be noted that the coins of different dates do not always give the same weights or measurements, partly owing to loss by wear and partly to slight difference in the amount of alloy. No difficulty will be found, however, in instantly determining the genuine from the counterfeit or from coins that have been filled or otherwise tampered with.

It will be noticed that the bearings B,B, are slightly raised above the upper surface of the plate, as shown in Fig. 1. They also have a true "knife-bearing". By this construction the proper poise of the plate is preserved and the weight-test is rendered extremely delicate.

In the apparatus thus described I provide a delicate and accurate test for determining the genuineness of coins of both metals and of all denominations. Its size is such that it may readily be carried in the vest-pocket; or it may be permanently erected upon an office desk. The economy of space I effect by the peculiar arrangement of the slots in the test-plates, and also by causing the parts to fold into substantial parallelism, as shown in Fig. 4. The arrangement of the openings in the plate also promotes the accuracy of the weight-test, since part of each of the three larger coins is counterbalanced by a corresponding portion of said coin lying upon the opposite side of the fulcrum-points, thus leaving a small portion, comparatively, to be counterbalanced by the test-weight, E. The degree to which the size and weight of the apparatus are diminished by this construction will be readily perceived.

In the case of a new coin which have not been subjected to use, it will be found that the milling occasionally leaves the edge of an unequal thickness, and that such coins will enter the measuring-slots with a little difficulty. With a little care, however, and by turning the coin, no difficulty will be experienced in determining its dimensions.

It is well, in using the apparatus, to introduce all coins with the date downward.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is-

1. A coin-balance suspended in folding standards or supports, the latter being pivoted to a platform or receiving box, whereby the parts may be folded into substantial parallelism, as and for the purpose described.
2. In a coin-balance adapted to test silver coin and nickels, the combination, with the balance-plate, of an attachable supplemental plate having openings adapted to determine the legal dimensions of gold coins, the latter being supported at the same time in said openings, for the purpose of determining their weight, substantially as and for the purpose described.

3. In an apparatus for testing coin, a balance-plate having openings of such size as to admit coins of different denominations, and thereby test their diameter and thickness, part of said openings being arranged longitudinally in said plate, and projecting upon both sides of a line drawn through the fulcrum-points of said plate, whereby fractional portions of each coin upon one side of said line counter-balance a corresponding portion of the same coin upon the opposite side of said line, thereby leaving only a part of the coin to be balanced by the test-weight, substantially as and for the purpose described.
4. The combination, with the balance plate having one or more measuring-openings, of a second adjustable plate having openings which so far correspond with those of the balance-plate as to permit the former to be applied to or mounted upon the latter for the purpose of testing coins of different metal by means of the same balance, substantially as and for the purpose described.
5. The combination, with the folding standards in which the balance-plate is mounted, of a box to which they are pivoted, and within which said standards are adapted to fold together with the balance-plate supported by them, the several parts folding into substantial parallelism, as and for the purpose set forth.
6. The combination, with the folding standards which support the balance-plate, of a receptacle which serves as a platform or support, burrs or equivalent projections being formed upon the vertical sides thereof in such position as to have frictional contact with the folding standards until the latter attain a substantially vertical position, as and for the purpose set forth.

MERRITT CLARKE

Witnesses:

MARION P. CLARK,
EDWARD CLARK.

No. 645,185.

Patented Mar. 13, 1900.

T. L. PORTER.
COIN DETECTOR.

(Application filed Aug. 17, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

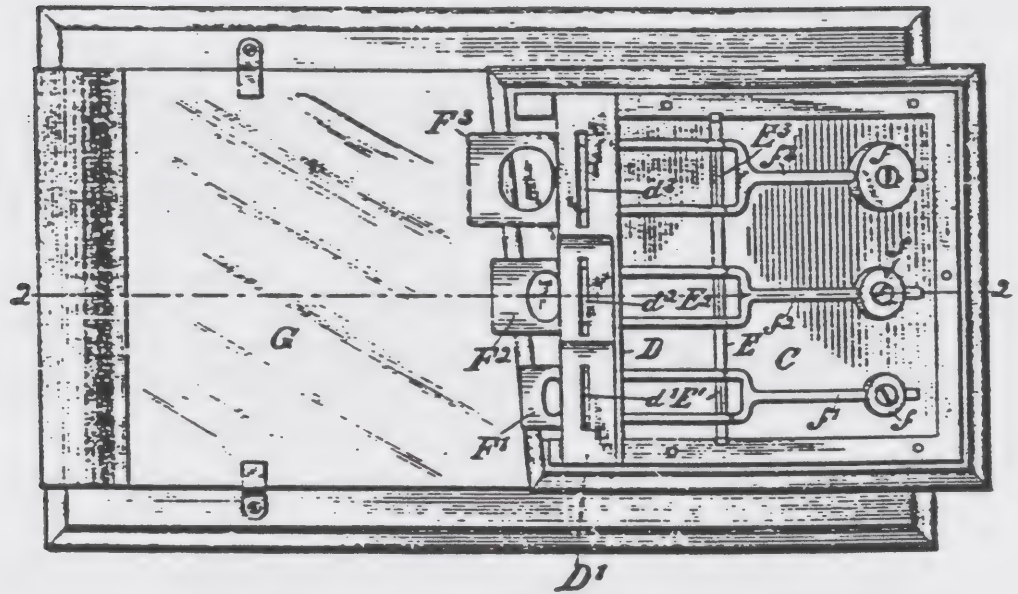
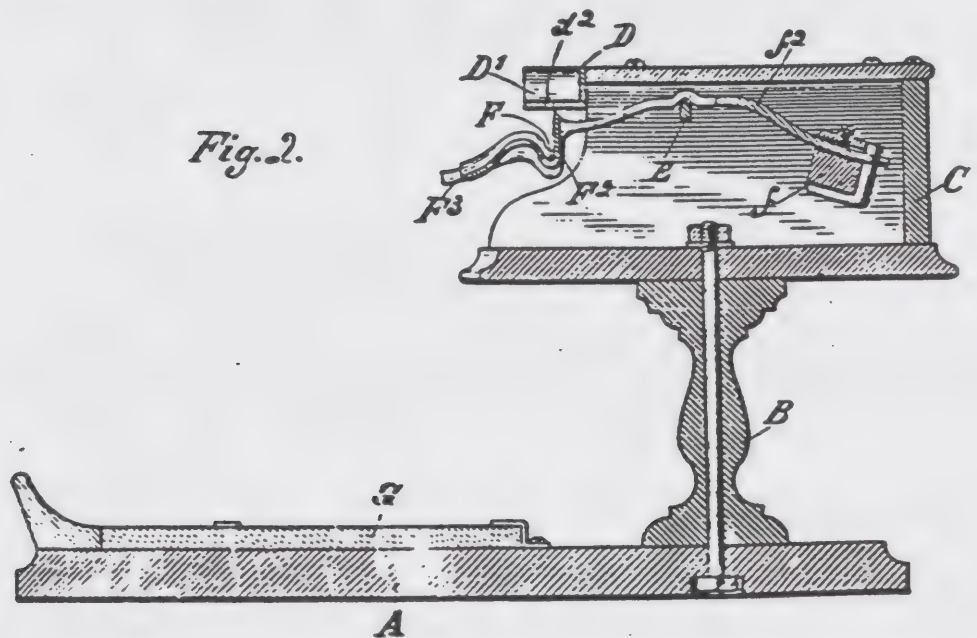


Fig. 2.



Witnesses:
W. C. Corlies
W. H. Cotton.

Inventor:
Thomas L. Porter
By Emery & Hopkins
Attys:

No. 645,185.

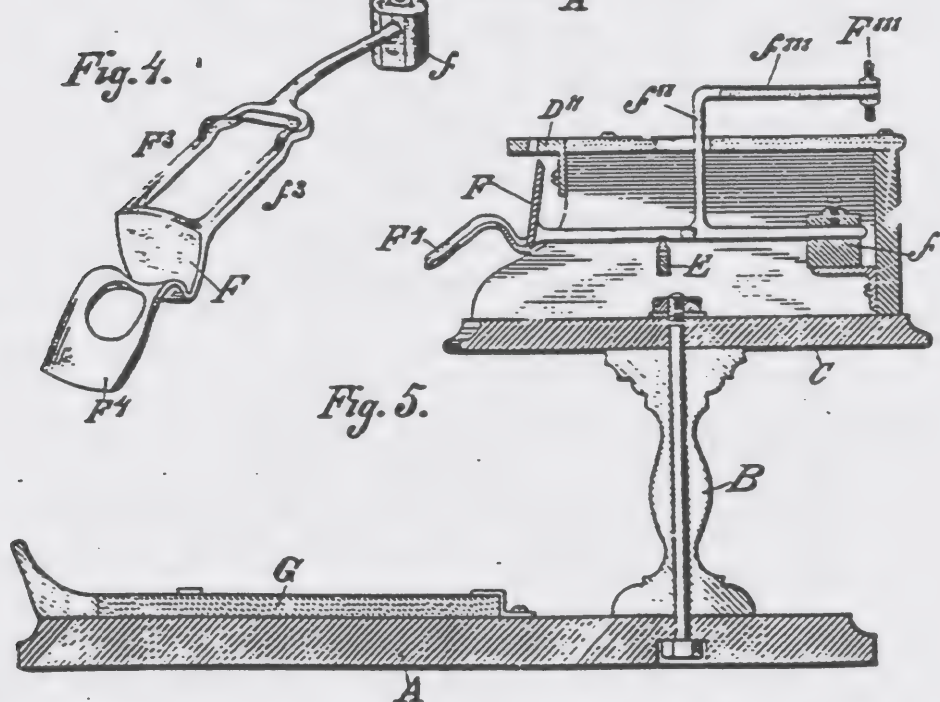
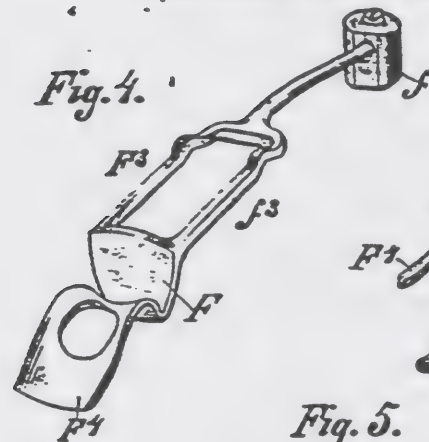
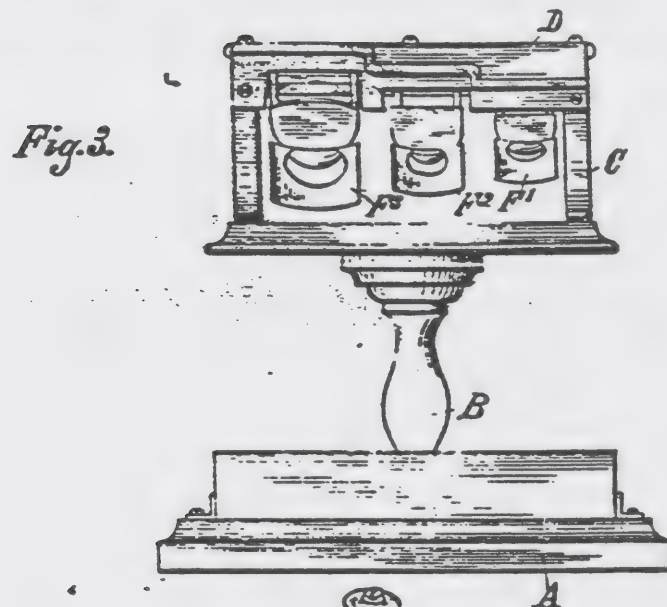
Patented Mar. 13, 1900.

T. I. PORTER.
COIN DETECTOR.

(Application filed Aug. 17, 1899.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:
H. C. Corlies
H. H. Cotton.

Inventor:
Thomas I. Porter
By Ernest W. Hopkins Attys.

UNITED STATES PATENT OFFICE

THOMAS I. PORTER, OF CHICAGO, ILLINOIS,
ASSIGNOR TO THE RAND McNALLY & COMPANY,
OF SAME PLACE

COIN DETECTOR

SPECIFICATION forming part of Letter Patent No. 645,185.
dated March 13, 1900 Application filed August 17, 1898,
Serial No. 727,500. (No Model)

To all whom it may concern:

Be it known that I, THOMAS I. PORTER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Coin-Detectors, of which the following is a specification. The object of the present invention is to provide a simple and efficient device for quickly testing coin as to size, weight, and ring with a view to detecting counterfeits. In carrying out this object, for testing the size of the coin a slot is used, and this slot is disposed immediately above a balance and in such relation thereto that as the coin leaves the slot by which its size is tested it passes immediately to the balance, by which it is tested as to its weight. The balance has a depressible coin-rest, and the depression of this rest is resisted by a force a trifle less than the correct weight of the coin to be tested, so that when a coin of the proper weight is delivered to the coin-rest the latter will be depressed, albeit it will not respond to a coin of insufficient weight. As the rest is depressed by the weight of the coin it discharges the coin by tipping it overside-wise onto a sounding board or table, by which its ring is tested, the rest being provided with an extension by which the coin is flipped or turned in order to its striking one of its flat faces. With this arrangement in order to make the three test it is simply necessary to insert the coin in the appropriate slot of the machine, and if it is genuine it will pass in rapid succession from one test to the next until the three are completed. The beam is provided with a slot and balance for each denomination of coin that is to be tested.

With silver coin it is seldom desired to ascertain the exact weight in case the test shows it to be light, whether it is or is not light being in most cases all that is desired to know; but in the case of gold coin it is sometimes desirable when a light coin is found to ascertain exactly what its weight is. To this end the balance in the preferred form of the invention is provided with a graduated arm, which has a weight mounted adjustably thereon, so that the exact weight of the coin or its deficiency may be determined.

The invention consists in the feature of novelty that are hereinafter described with reference to the accompanying drawings, which are made a part hereof, and in which-

PATENT NO. 645,185
[CHP. 2 : SEC. 2C]

[II-2C-10B]

Figure 1 is a plan view of a coin-detector embodying some features of the invention, the specific embodiment here shown being a detector designed more especially for silver coin. Fig. 2 is a vertical section thereof on the line 2, 2, Fig. 1. Fig. 3 is a front view thereof with all of the coin-rests of the balance depressed. Fig. 4 is a perspective view of one of the balances. Fig. 5 is a vertical section of a coin-detector embodying the invention in what is hereby elected as the preferred form of the invention for the purposes of this application.

A represents a base, from which rises a standard B, surmounted by a box C, the top of which is omitted from Fig. 1 in order to show the balances. Secured to the front of the box and crossing it from side to side is a plate D, having a horizontal flange D' stepped or offset vertically, each step or offset being provided with a slot of the size appropriate for measuring a coin of a given denomination, said slots being designated d', d², and d³ respectively. Crossing the box in the rear of the plate D is a fulcrum-bar E, having knife-edge bearings E', E², and E³, upon which the beams f', f², f³ of three balances F' F² F³ are mounted to oscillate. Each of these balances comprises a beam (f', f², or f³, as the case may be,) a weight f, carried by the beam on one side of the fulcrum, and a coin-rest F, carried by the beam on the other side of the fulcrum. The coin-rest is so constructed that when in its initial position it supports the coin on edge and in a plane which is parallel with the axis of oscillation of the balance, and when depressed it dumps the coin off side-wise as distinguished from allowing it to roll out edgewise. To these ends the coin-rest has a seat for the coin, the general direction of which is parallel with the axis of oscillation and which is curved to conform more or less exactly to the periphery of the coin, a high rear wall which serves to support the coin on edge, and a front wall which slopes toward the seat for the purpose of guiding each coin to exactly the same place thereon and which is low in order to allow the coin to tumble over when the center of gravity of the coin passes the vertical plane of the seat. The coin-rest of each balance is disposed directly beneath one of the slots, and the distance between the bottom of any given coin-rest and that portion of the flange D', through which the corresponding slot is made is a trifle less than the diameter of a coin of the denomination appropriate to the slot and rest in question. This being so, should a coin being tested be too light it will not depress the rest, and the engagement of the coin with the flange D' will prevent the coin from falling out of the rest. On the other hand, if the coin undergoing test is of proper weight it will depress the rest, and as soon as its upper margin escapes from engagement with the flange D', the coin will fall forward onto a sounding board or table G, which preferably consists of a glass slab. It is not however, essential to use a separate slab as a sounding-board; but, on the contrary, if desired, the base A may be used for the purpose. In this connection A may be considered as representing either a base forming a part of the apparatus or the top of a desk, table, or counter on which the apparatus is mounted. In order to cause the coin to fall on one of its flat faces, each of the coin-rests is

provided with an extension which forms a continuation of the front wall of the rest and is curved on its top side, the extension of the several rests being indicated by the letter F⁴. As before stated, it is seldom desired to ascertain the exact weight of a light silver coin, and hence for testing silver coin a machine constructed as above described will answer every purpose; but for gold coin more exactness is required, and it is sometimes desirable to ascertain the exact weight of the coin or the exact amount of the deficiency. To these ends it is necessary to prevent the frictional contact of the coin with the sides of the slot or with any other part of the machine while the coin is being weighed, (otherwise the result indicated by the weighing apparatus will be inaccurate to the extent of the friction,) and it is necessary to provide the balance with an adjustable weight. In order to prevent frictional contact of the coin with any part that would prevent it being accurately weighed, the coin-rest is preferable made, as shown in Fig. 5, with a rear wall that inclines slightly from the vertical, (the rest being in other respects as already described with reference to the preceding figures,) so that in the initial condition of the balance the coin will keep its place on the rest without support from any other part, and, in fact, will not leave it until the end of the beam carrying the rest has been depressed sufficiently to throw the center of gravity of the coin past the vertical line drawn through its supporting-point on the rest.

In the form of the invention shown in Fig. 5 the slots for receiving the coin are made through a plate D'', which is without offsets. The top of this box is provided also with an opening, through which extends an arm f'', rising from the beam of the balance and having a laterally-projecting branch f''', on which a weight F''' is adjustably mounted, the arm f''' being provided with appropriate graduations or a scale for indicating the weight or the deficiency in the weight of the coin. In this form of the invention the coin during the test for weight is without contact with any part of the machine excepting the coin-rest itself, and therefore friction is entirely eliminated. If the coin is of the proper weight, the balance, as in the case of the testing-machine shown in Figs. 1 to 4, inclusive, will respond to the weight of the coin and the coin will be dumped onto the sounding-board. On the other hand, if the coin be of insufficient weight the balance will not respond, and thereafter the exact weight or the exact insufficiency in the weight (depending upon the character of the scale on the branch f''' of the arm, f'') may be ascertained by adjusting the weight F''' until the coin balances. Otherwise the machine shown in Fig. 5 is practically the same as that shown in Figs. 1 to 4, inclusive. What I claim as new, and desire to secure by Letters Patent-, is-

1. In a coin-detector, the combination of a beam, a fulcrum therefor, a depressible coin-rest carried by the beam on one side of the fulcrum and a weight carried by the beam on the other side of the fulcrum and adapted to prevent the depression of the rest by a coin of insufficient weight while permitting its depression by a coin of proper weight, said coin-rest having means of supporting the coin on edge in

a substantially-vertical plane parallel with the axis of oscillation of the beam, means of preventing the coin from rolling off of the side of the beam, and means for discharging the coin sidewise at the end of the beam when the coin-rest is depressed, substantially as set forth.

2. In a coin-detector, the combination of a beam, a fulcrum therefor, a depressible coin-rest carried by the beam on one side of the fulcrum, and means for preventing the depression of the rest by a coin of insufficient weight, said rest having a seat for the coin disposed substantially parallel with the axis of oscillation, a rear wall for supporting the coin on edge, and a low front wall over which the coin falls sidewise when the rest is depressed, substantially as set forth.
3. In a coin-detector, the combination of a beam, a fulcrum therefor, a depressible coin-rest carried by the beam on one side of the fulcrum, and means for preventing the depression of the rest by a coin of insufficient weight, said rest having a seat curved to conform to the periphery of the coin and disposed substantially parallel with the axis of oscillation, a substantially-vertical rear wall adapted to support the coin on edge in a substantially-vertical plane parallel with the axis of oscillation, and a low front wall sloping toward the seat, substantially as set forth.
4. In a coin-detector, the combination of a beam, a fulcrum therefor, a depressible coin-rest carried by the beam on one side of the fulcrum, means for preventing the depression of the rest by a coin of insufficient weight, said rest having means for supporting the coin on edge and in a plane parallel with the axis of oscillation, while the rest is in initial position, and means for discharging the coin sidewise when the rest is depressed, a sounding-board arranged to receive the coin after it is discharged, and means carried by the rest for flipping the coin, substantially as set forth.
5. In a coin-detector, the combination of a beam, a fulcrum therefor, a depressible coin-rest carried by the beam on one side of the fulcrum, said rest having a seat for the coin disposed substantially parallel with the axis of oscillation of the beam, a rear wall for supporting the coin on edge, and a low front wall sloping toward the seat, sounding-board adapted to receive the coin as it falls, and a curved projection forming an extension of the front wall of the rest, substantially as set forth.

THOMAS I. PORTER.

Witnesses:

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No. 867,304.

PATENTED OCT. 1, 1907.

M. D. SADTLER.
COIN TESTING MACHINE.
APPLICATION FILED JUNE 22, 1906.

FIGURE-SHEET 1.

Fig. 1.

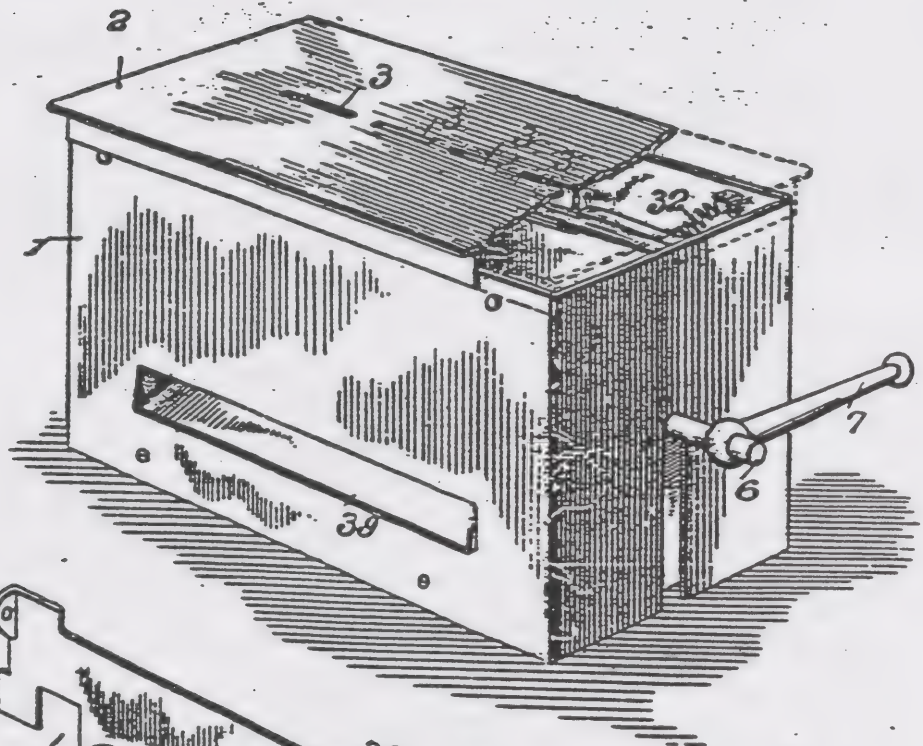


Fig. 9.

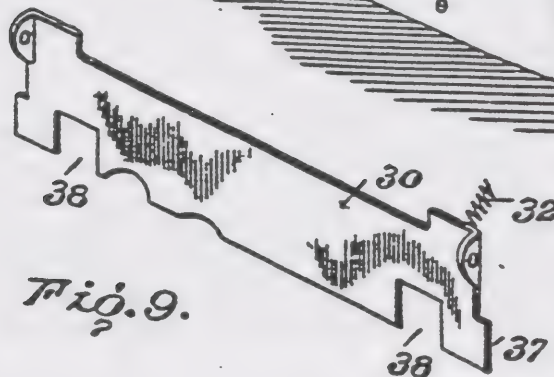
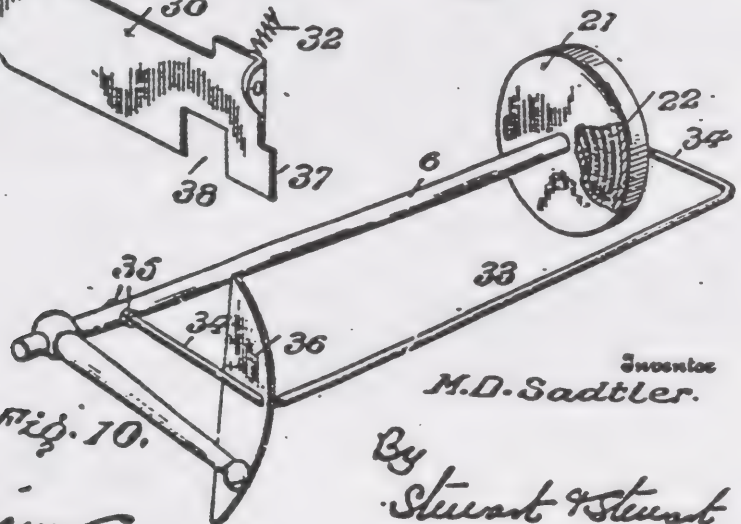


Fig. 10.



Witnesses

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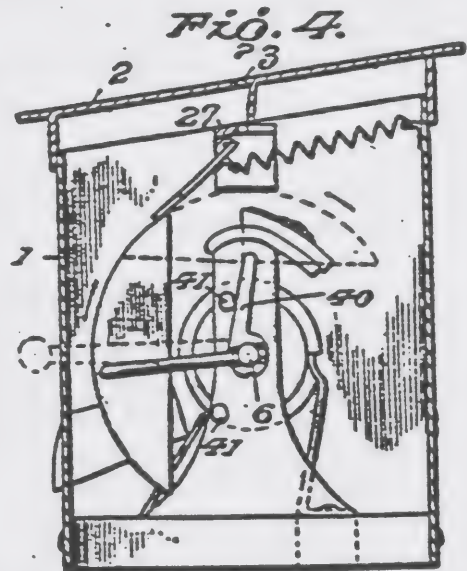
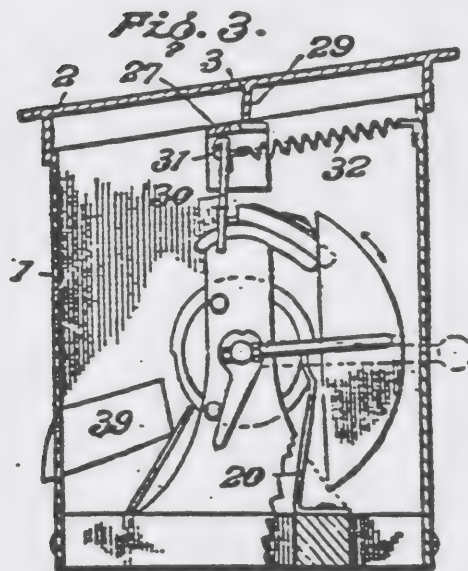
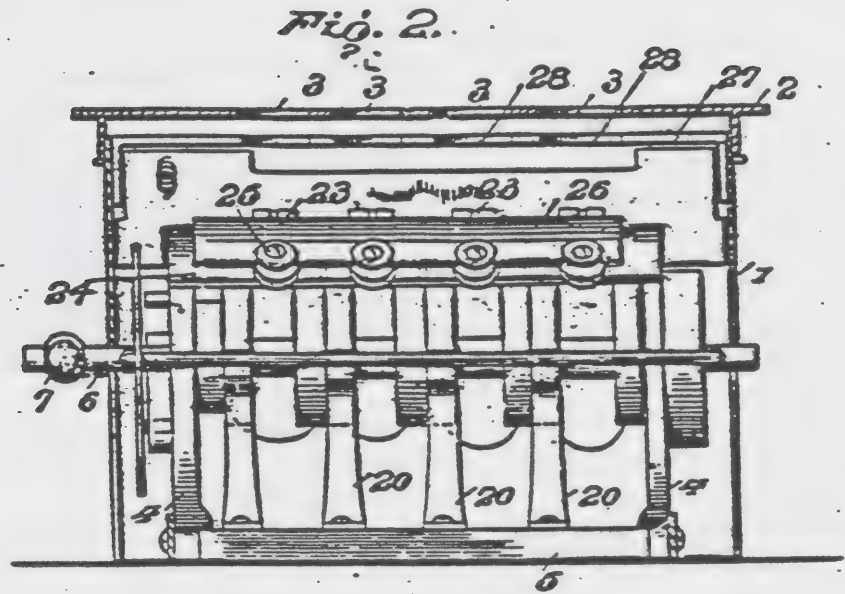
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3 SHEETS—SHEET 1.



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APPLICATION FILED JUNE 21, 1904.

3 SHEETS-SHEET 1.

Fig. 5.

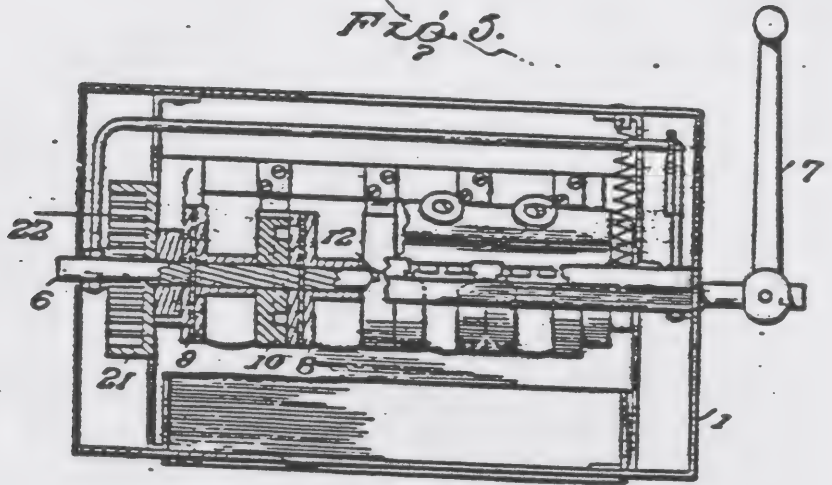


Fig. 6.

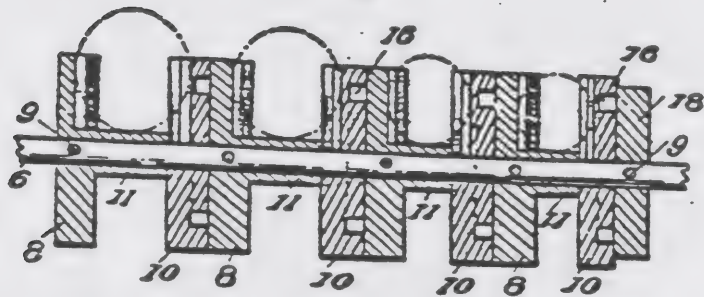


Fig. 7.

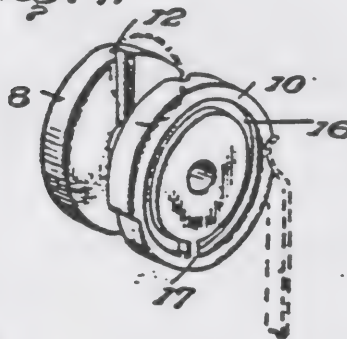
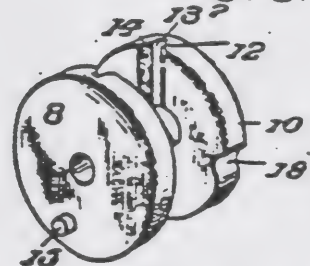


Fig. 8.



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UNITED STATES PATENT OFFICE

MORGAN D. SADTLER, OF BALTIMORE, MARYLAND,
ASSIGNOR OF ONE HALF TO JESSE B. FORRESTER
BALTIMORE, MARYLAND

COIN-TESTING MACHINE

NO. 867,304 Specification of Letters Patent Patented Oct. 1, 1907

Application filed June 22, 1906. Serial No. 322,904

To all whom it may concern:

Be it known that I, MORGAN D. SADTLER, a citizen of the United States of America, and a resident of Baltimore city and State of Maryland, have invented certain new and useful Improvements in Coin-Testing Machines, of which the following is a specification.

My invention relates to certain new and useful improvements in coin testers adapted to be used in connection with coin controlled machines of all types.

The object of my invention is to provide a mechanism which will test each coin dropped into the machine and if it is attempted to operate the machine by what is commonly called a slug, the mechanism will throw out the slug, though it is of the proper size, diameter, thickness and weight.

My invention tests each coin presented to the machine and unless the coin is of proper size, diameter, thickness and made of the proper metal, the tester will not pass the coin in a matter to operate the coin actuating mechanism to which the tester is applied.

In the form of my invention shown, the tester is adapted to test various denominations of coins. It is to be understood, however, that the number of denominations which can be tested may be varied as desired.

Referring to the drawings, wherein I show one embodiment of my invention for the purpose of illustrating the same and wherein the same part is designated by the same reference numeral wherever it occurs. Figure 1 is a perspective view of such a tester adapted to be applied to any suitable form of coin controlled mechanism, the top of the case being partly broken away. Fig. 2 is a longitudinal section of the case showing the testing mechanism in a side elevation. Fig. 3 is an end view showing the case in section and operating parts in elevation and in their normal position. Fig. 4 is a view similar to Fig. 3 showing the parts in the position they occupy at the limit of movement of the mechanism during the testing operation. Fig. 5 is a top plan view partly in section of the device with the cover removed. Fig. 6 is a central longitudinal section of the testing disks, the shaft on which they are mounted being shown in elevation. Fig. 7 is a detail perspec

PATENT NO. 867,304
[CHP. II : SEC. 2C]

[II-2C-14C]

-tive view of a pair of disks removed from the shaft. Fig. 8 is a view similar to Fig. 7 showing the other side of a pair of disks. Fig. 9 is a detail view of the hinged member of the coin guide. Fig. 10 is a detail perspective view of the shaft on which the disks are mounted and connected thereto, the disks not being shown on the shaft.

- 1 designates a rectangular case provided with a cover 2, having slots 3, formed therein for the insertion of coins.
- 4-4 designates a pair of side frames which are secured to a base 5, these side frames preferably as shown, and provided with means by which the case, 1. may be secured thereto to enclose the testing mechanism.
- 6 designates a shaft journaled in bearings in said frame 4 and provided at the end with a handle, 7, which is located outside of the casing 1.
- 8 designates a series of disks mounted on the shaft 6, the disks being secured to the shaft by any suitable means, as for instance, the pins 9.
- 10 designates a second series of disks which are loosely mounted on the shaft.
- 11 are spacing sleeves which, preferably and as shown, are formed integral with the disks 8 and hold the disks 10 spaced a proper distance away from the face of the disks 8. Each of these disks 8 and 10 is provided with a slot 12, the slot being formed radially of the disk, the walls of the slot at the bottom, 13 and for about half the distance to the face of each disk being parallel, the walls then being beveled outwardly as at 14, whereby a slot of a substantially Y-shaped cross-section is formed, as best seen in Figs. 7 and 8. The disks are assembled on the shaft so that a fast disk and a loose disk alternate. The hub 11 extends from the side of the disk 8 which is provided with the slot 12. The slot of the loose disk 10 which is separate from the fast disk 8 by spacing sleeves or hob 11, faces the slot in the fast disk whereby the disks form by their slots a pair of jaws adapted to receive a coin, the length of the hubs 11 determine the size of the coin which each pair of jaws is adapted to receive.

The pair of jaws are preferably and as shown, assembled on the shaft so that the fast and loose disks of adjacent pairs of jaws are in contact whereby the loose jaws are held from endwise movement on the shaft. On the face of each of the fast jaws opposite that containing the slot, I preferably provide a pin 15 adapted to engage a concentric groove 16 formed in the adjacent face of the loose disk.

- 17 is a stop formed in the groove 16 with which the pin 15 is adapted to contact, whereby the disk 10 will be caused to rotate with the fast disk 8 when the pin and stop are in contact. The pin 15 and the stop 17 in the slot 16 are so located with respect to each other that when each of the fixed jaws is in normal position, the loose jaws will be held in their normal position by contact between the pin 15 and the stop 17.
- 18 is a disk mounted on the end of the shaft adjacent the end loose disk and secured to the shaft by a pin 9 the same as the fast disks, 8. The disk 18 is provided with a pin 15 adapted to engage with stop 17 in the groove 16 of the adjacent loose disk, whereby this loose disk will be caused to turn to its normal position by the pin engaging the stop in the same manner as the other loose disks.
- 19 are notches cut in the side of each of the loose disks with which the free end of springs 20 are adapted to engage. The springs 20 are secured at their base to the frame 5 and they are so positioned that their free ends will engage the notches in the loose disks to hold the loose disks in their normal position in line with the slots of the fast disks when they are in normal position, as shown in Figs. 5 and 6. These springs also act to produce sufficient resistance to the rotation of the loose disks as to cause the pair of disks to bend a coin held between them which is of less hardness than the standard, because the loose disks will not be moved unless the coin or token is of the hardness of the standard coin.
- 21 is a flanged disk which is secured to one side of the side frames 4 and through which the shaft 6 loosely passes. To the inside of the flange of this disk is secured one end of a clock spring 22, the other end of the clock spring being secured to the shaft 6 whereby the spring will operate to return the parts to their normal position as soon as the handle is released after the operation of the machine.

In order to prevent slugs formed of iron, such as washers and the like, from being fed into the machine, which might operate the machine, if they were of the proper size to accurately fit the slot in a pair of disks and of the proper thickness to be positioned in the slots, due to the fact that they are so hard that they would not be bent under the twisting action of the pair of jaws, I mount a series of magnets 23 on a plate 24 extending between the side frames 4 over the disks. These magnets 23 are shown as secured to the plate 24 by means of screws 25, one magnet being arranged over each pair of jaws.

- 26 is a plate covering all of the magnets except their ends and held in position by means of screws 25. The magnets are shown as being horse-shoe magnets and the ends of the horse-shoes are so located as to be adjacent to the path of the coin from the coin slots 3 to the slots in the disks, as shown in Fig. 5. From this, it will be

seen that should an iron washer or similar slug be inserted in the machine, it will be stopped by the magnets and held, thus, preventing such slug from entering the machine.

- 27 designates a frame which extends from one end of the case to the other and is located near the top of the case. This frame is provided with coin slots 28 which register with the slots 3 in the top of the case.
- 29 is a guiding flange which extends downward from the top 2 adjacent slots 3 on to the top of the frame 27 besides the coin slots 28 whereby a coin dropped in the slots 3 is guided from the slots 28.
- 30 is a plate which forms a pivoted coin guide, it being pivoted at 31 to the ends of the frame 27. This plate is adapted to guide the coin after it passes through the slots 28 down into the slots of the disks.
- 32 is a spring one end of which is connected to the guide plate 31 and the other to the side of the casing whereby the plate is held normally in position to guide the coin in its proper path. The lower end of this plate extends down close to the periphery of the disks and, preferably, the coin slots in the disks are of such a depth that a portion of the coins project beyond the periphery of the disks when they are in position. It is therefore, necessary to move this plate out of the path of the coins when the disks are rotated to test the same. It is to permit of this movement that the guide is hinged.
- 33 designates a rod which is formed of a main portion of sufficient length to extend from one end of the shaft 6 nearly to the other and is secured to the shaft outside of the side frame 4. The ends 34 of the rod 33 are bent inwardly at right angles and preferably and as shown, pass through openings in the shaft and are engaged in position by means of nuts 35. The ends 34 of the rod are of such a length that its main portion 33 will pass over the tops of the magnets and close thereto in order to knock off the magnets any slugs which may be held thereon, by the magnetic attraction.
- 36 is a wing cam mounted on the rod 33 at a corner and this wing cam is adapted to engage a projecting end portion 37 of the hinged guide 30. The hinged guide being of sufficient length to extend outside the side frame and is provided with slots 38 whereby the guide may straddle said side frames. From this, it will be seen that the wing cam 36 will move the guide out of the path of the coin being held between the disks in the testing operation and will also move the guide out from in front of the magnets so that the rod 33 can remove a slug held by the magnets.

39 is a chute extending from the casing 1 and located in such a position as to catch any slug knocked off the magnet or slug which is bent in the operation of the testing jaws.

40 is an arm mounted on the shaft 6 and adapted to contact with the stops 41 mounted on the side frame, whereby the revolution of the shaft on the operation of the handle in one direction and the spring in another, is limited to one half revolution. The arm on the shaft is so proportioned in relation to the stop that when it is against the lower stop in its normal position and held there against by the spring, the slots in the disks will be direct under the coin slots in the cover so any coin dropped through the slot in the cover will fall into the corresponding slot in the pair of disks.

In the operation of my device, the parts being in their normal position, a token may be dropped through the proper coin slot 3 and will pass down through the corresponding slot 28 and will be guided by the moving guide 30 adjacent to the end of one of the magnets 23. If the token is not composed of iron, it will pass by the magnet without being attracted. If however, it is of iron, it will be caught by the magnet and held with the upper edge of the token extending above the upper surface of plate 26. If, however, the magnet does not stop the token, then it drops down into the slots in the disks 8 and 10. When now, the handle 7 of the shaft is turned, all of the fast disks 8 turn therewith and if the token is of the proper hardness, it will be sufficient to cause the loose disk of the pair engaging the token to move with the fast disk against the tension spring 20 and the two disks will be revolved together carrying the token between them. This rotation will continue until the arm 40 engages the upper pin 41 when the parts will be in the position in Fig. 4. The striking of the arm 40 against the pin 41 will cause the coin to be released and dropped out of the tester, down into the bottom of the device where it may pass on to any suitable coin controlled mechanism. If, however, the token is not of standard hardness, then when the shaft is turned, the spring 20 will offer sufficient resistance to the rotation of the loose disk to cause the token to be twisted out of the grip of the slots in the disks and the token will fall onto the chute 39 and will be delivered out of the testing machine without the loose disk turning.

The stop 17 in the peripheral slot 16 of the loose disk is so located with respect to the pin 15 on the adjacent fast disk that the fast disk can turn forward without moving the loose disk. If, however, the loose disk is moved by a token of proper hardness, then it will be carried around and the pin 15 and stop 17 will be in such relation that upon the return movement of the shaft, the pin 15 will immediately engage the stop and return the loose disk to its normal position, ready to receive the next token. As soon as it has been returned, the end of the spring 20 engaging the notch 19, will hold the same in position to receive the next token.

While I have described what I believe to be the preferred form of my invention, I desire to have it understood that many changes may be made in the form, construction and arrangement of parts, and other elements may be substituted for those here shown and described, for the purpose of carrying out the functions of the elements therein shown and described, without departing from the spirit of my invention, and that wherein I use the term "means", this term is to be understood as covering all forms of mechanism which are capable of performing the function ascribed to the term in the claim.

What I claim as new and desire to secure by Letters Patent is:-

1. In a coin testing machine, the combination with a plurality of pairs of jaws, each pair being adapted to hold a coin between them, of the means for subjecting one jaw of each pair to a resistance sufficient to bend anything of less hardness than the coin to be tested and means for moving all the jaws not subject to tension simultaneously whereby a coin will either move the jaw subject to tension or be bent.
2. In a coin testing machine, the combination with a plurality of pairs of jaws, each pair of jaws being provided with slots in their adjacent faces adapted to receive the coin between them, of means of subjecting one of each pairs of jaws to a resistance sufficient to bend anything of less hardness than the coin to be tested and the means for turning all the jaws not subject to tension simultaneously, whereby a coin or token held between any of the pairs of jaws will either move the jaw subject to tension or be bent.
3. In a coin testing machine, the combination with a shaft, of a pair of jaws spaced apart and mounted on said shaft, one of said jaws being fast on said shaft and the other being loosely mounted thereon, means for subjecting the jaw which fits loose on said shaft to a resistance sufficient to bend anything of less hardness than the coin to be tested and means whereby the shaft may be rotated whereby a coin or token held between the jaws will either move the jaw subject to tension or be bent.
4. In a coin testing machine, the combination with a shaft, of a plurality of pairs of jaws mounted on the shaft, one of the jaws of each pair being fast on the shaft and the other loose thereon, means of subjecting the latter one of each pair of jaws to a resistance sufficient to bend anything of less hardness than the coin to be tested and means whereby the shaft may be rotated to rotate all the jaws fast thereon whereby a coin or token held between any of the pairs of jaws will either move the jaw subject to tension or be bent.

5. In a coin testing machine, the combination with a shaft, of a pair of jaws mounted on said shaft, one of said jaws being fast and the other loose thereon, said jaws being adapted to hold a coin between them, means for subjecting said loose jaw to a resistance sufficient to bend anything of less hardness than the coin to be tested, means whereby the shaft may be turned to rotate the jaw not subject to tension, whereby the coin or token held between the jaws will either turn the jaw not subject to tension or be bent and means fast on shaft and adjacent to the loose jaw adapted to return the jaw to its normal position after it has been moved therefrom by a coin.
6. In a coin testing machine, the combination with a shaft, of a pair of disks mounted on the shaft adapted to hold a coin in them, one of said disks being fast on the shaft, and the other loose, means of subjecting the loose disk to a resistance sufficient to bend any coin of less hardness than the coin to be tested, means whereby the shaft may be turned to turn the disk not subject to tension whereby the coin or token will either turn the jaw subject to tension or be bent, a disk mounted on the shaft adjacent to the loose disk and a connection between said last mentioned disk and the loose disk whereby the loose disk will be returned to its normal position upon the return of the shaft.
7. In a coin testing machine, the combination with a shaft, of a plurality of pairs of jaws mounted on a shaft each pair being adapted to hold a coin between them, of each said pairs of jaws being loose on said shaft and the other fast thereon, the loose jaw of one pair being adjacent to the fast jaw of the adjacent pair, means for subjecting the loose jaw to a resistance sufficient to bend any thing of less hardness than the coin to be tested, means whereby the shaft may be rotated to rotate all the jaws fast thereon simultaneously whereby a coin or token held between any of the pairs of jaws will either move the jaw subject to tension or be bent, and connection between adjacent jaws of the adjacent pairs, whereby the fast jaw of one pair will return the loose jaw of the adjacent pair when the same has been moved from its normal position.
8. In a coin testing machine, the combination with a pair of jaws adapted to hold the coins between them, of the means of subjecting one of the jaws to a resistance sufficient to bend any thing of less hardness than the coin to be tested, means for moving the jaw not subject to tension whereby the coin or token will either move the jaw subject to tension or be bent, a movable part adapted to form a guide for the coin to the jaws and means for moving said movable part out of the path of movement of the coin in the grip of the jaws.

Signed by me at Baltimore city & State of MD. this 20th day of June 1906.

Witnesses:

WILLIAM W. POWELL,
JOHN EMORY CROSS.

MORGAN D. SADTLER

March 31, 1925.

1,531,642

L BRAGIN

SPURIOUS COIN DETECTOR

Filed July 6, 1923

Fig. 1.

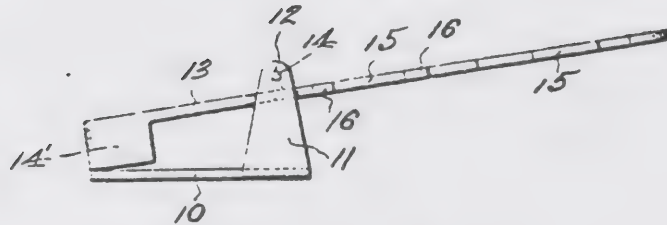


Fig. 2.

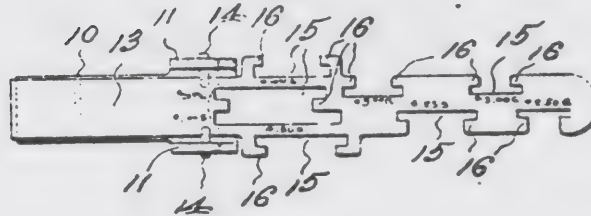


Fig. 4.

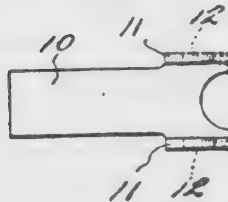
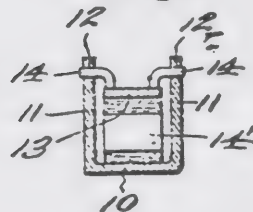


Fig. 3.



Leopold Bragin, Inventor
W. Bragin, Administrator for
the estate of Leopold Bragin, deceased

M. May D. D. D.

WITNESS:

Victor J. Evans

ATTORNEY

UNITED STATES PATENT OFFICE

LEOPOLD BRAGIN, DECEASED, LATE OF
BROOKLYN, NEW YORK;
BY WOLF BRAGIN, ADMINISTRATOR,
OF GREENWICH, CONNECTICUT.

SPURIOUS COIN DETECTOR

Application filed July 6, 1923.

Serial No. 649,942.

To all whom it may concern:

Be it known that LEOPOLD BRAGIN deceased, late a citizen of Russia, and resident of Brooklyn, in the county of Kings and State of New York, has invented new and useful Improvement in Spurious Coin Detectors, of which the following is the specification.

This invention relates to devices for testing coins, and has for its object the provision of a novel balance device formed with holding slots designed to receive coins of different denominations, one at a time, discrepancies in the size of the coins being indicated by refusal of the coin to enter the slot or by its slipping through the slot, and discrepancy in the weight being indicated by too little or too great movement of the balance arm.

An important object is the provision of a device of this character which will be very simple and inexpensive in manufacture, neat in appearance, compact, efficient and durable in service and a general improvement in the art.

With the above and other objects and advantages in view, the invention consists in the details of construction to be hereinafter more fully described and claimed and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of the device. Figure 2 is a plan view. Figure 3 is a cross section taken through the pivotal connection, and Figure 4 is a plan view of the base.

Referring more particularly to the drawings, the numeral 10 designates a base constructed of any suitable material and carrying spaced uprights 11 which may be secured thereto or formed integrally thereon, as preferred. The upper ends of the uprights are formed with bearing holes 12.

In connection with the above described base, I provide a balance arm 13 which is formed at opposite side with pins or trunnions 14 engaged within holes 12 so that the arm is pivoted. The shorter end of the arm has its un-

PATENT NO. 1,531,642

[CHP. II : SEC. 2C]

[II-2C-22]

PATENT NO. 1,531,642 - continued

underside weighted as indicated at 14 and has its longer arm formed with slots 15 defined by overhanging projections 16. The different slots are of

Figure 1 is a side elevation of the device. Figure 2 is a plan view. Figure 3 is a cross section taken through the pivotal connection, and Figure 4 is a plan view of the base.

Referring more particularly to the drawings, the numeral 10 designates a base constructed of any suitable material and carrying spaced uprights 11 which may be secured thereto or formed integrally thereon, as preferred. The upper ends of the uprights are formed with bearing holes 12.

In connection with the above described base, I provide a balance arm 13 which is formed at opposite side with pins or trunnions 14 engaged within holes 12 so that the arm is pivoted. The shorter end of the arm has its underside weighted as indicated at 14 and has its longer arm formed with slots 15 defined by overhanging projections 16. The different slots are of different sizes and are intended to receive coins of different denominations.

The slots for the heavier coins are naturally nearer the pivot point than the slots for the lighter coins. It is preferable that the balance arm be inscribed adjacent each coin slot with a legend indicating the denomination of the coin intended to be inserted in that particular slot. From an inspection of Figure 3 it will be seen that the slots will receive gold coins of \$20.00, \$10.00, \$5.00, \$3.00 and \$2.50 denominations and silver coins of \$1.00, 50c and 25c.

In the use of the device any coin to be tested is inserted into the proper slot as indicated by the legends. If a coin is too thick to be genuine or of too large diameter to be genuine it will not enter the slot at all, while if it is too thin or of too small diameter to be genuine it will pass entirely through, thus indicating its spurious nature. If the coin is of the proper size but of the wrong weight, the arm will either fail to swing upon its pivot 14, or else will swing too far, again indicating that the coins are counterfeit or else they have been "sweated" or "plugged", as is a common occurrence in the matter of gold coinage, or else that the coin is of an unauthorized alloy. It is of course necessary that the positions of the various slots be carefully gaged, so that a \$2.50 gold piece, for example, will swing the balance arm just as freely as will a \$20.00 gold piece.

From the foregoing description and the study of the drawings, it will be apparent that I have thus provided a simple constructed and consequently inexpensive device which will positively operate to test coins and detect all counterfeits. The device is well adapted for use in any business and is neat in appearance and rapid in action. Owing to the simplicity of the construction and the fewness of the parts it is apparent that there is nothing to get out of order so that the device should have a long life and

PATENT NO. 1,531,642

[CHP. II : SEC. 2C]

[II-2C-23]

satisfactorily perform all of its functions.

While I have shown and described the preferred embodiment of the invention it is of course to be understood that I reserve the right to make changes in the form, construction and arrangement of the parts as will not depart from the spirit of the invention or the scope of the subjoined claim.

Having thus described my invention, I claim:

A device of the character described comprising an elongated supporting base formed at one end with spaced upstanding ears, and elongated lever disposed between said ears and formed at opposite edges of its intermediate portion nearer one end than the other, with angular extensions constituting trunnions pivotally engaged through said ears, the shorter arm of said lever being weighted and normally resting upon the top of said base at one end thereof, and the longer arm of the lever being formed with a plurality of slots of different widths and lengths adopted to receive coins of different denominations to be tested, said long arm of the lever being inscribed with legends opposite the respective slots for indicating the denomination of coins to be engaged therein.

In testimony whereof I, Wolf Bragin, administrator of the estate of Leopold Bragin, deceased, affix my signature.

WOLF BRAGIN
Administrator of Leopold Bragin, deceased.

(For more see IV-4-20 et seq.)

CHAPTER II

UNITED STATES PATENTS

SECTION 2D

UNITED STATES COMBINATION COUNTERFEIT COIN DETECTING MECHANISMS AND POSTAL SCALES

These devices were a combination of a counterfeit coin detecting mechanism and a postal scale. It should be noted that the Congress of the United States enacted legislation, effective July 1, 1845, that established postal rates of five (5) cents per sheet based upon an initial distance of less than three hundred miles and for a distance greater than three hundred miles, the rate was ten (10) cents. The first official U. S. postage stamps were issued in 1847 and consisted of the five cent stamp with the portrait of Benjamin Franklin and the ten cent stamp with that of George Washington. In due course postage rates were determined by weight.

Thus letters had to be carefully weighed to avoid underpayment or overpayment of postage. Thus there was an attempt by the scale makers to try to combine two necessary items of business, postal rates for mail and the adequacy of the coins offered during business transactions. A combination letter and counterfeit coin detecting mechanism could serve both purposes.

A word of caution is advisable at this point before describing these devices. Some are listed under this section, (for example, the Maranville Patent No 203,057), because the patent was for just such a device. Yet, the patented item is not currently known to exist, only the counterfeit coin detecting device as later described. The Hoag Patent No. 216,184 is known in both a combination device and as a simple counterfeit coin detector without the postal application. Thus it should be bourn in mind that just because a patent indicated certain attributes to the device or devices, actual working examples may not always conform to the requirements of the issued Letters Patent.

The Thompson patent No. 187,936 did not cover use as a postal scale but such markings were added to that product in the later variety as shown in Chapter IV.

SUMMARY OF PATENTS FOR COMBINATION COUNTERFEIT COIN DETECTING MECHANISMS AND POSTAL SCALE (Arranged in Chronological Order of Patent Date)

| NO. | TITLE | PATENTEE | PAT. NO. | DATE |
|-----|---------------------|------------------|----------|----------------|
| 1 | Coin & Letter Scale | D. Cumming., Jr. | 39,890 | Sept. 15, 1863 |

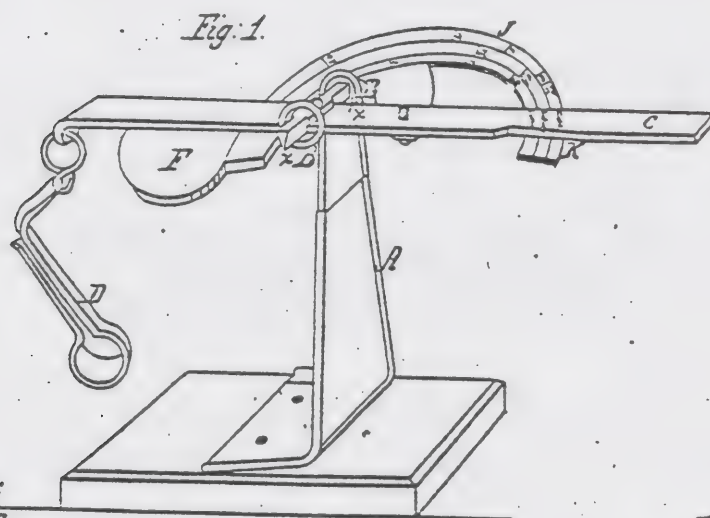
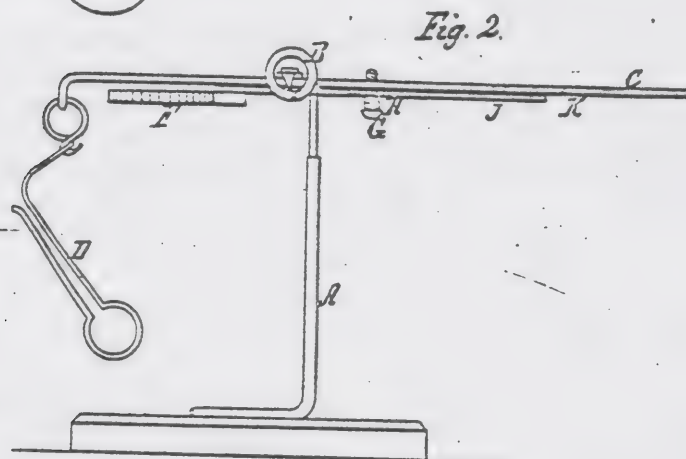
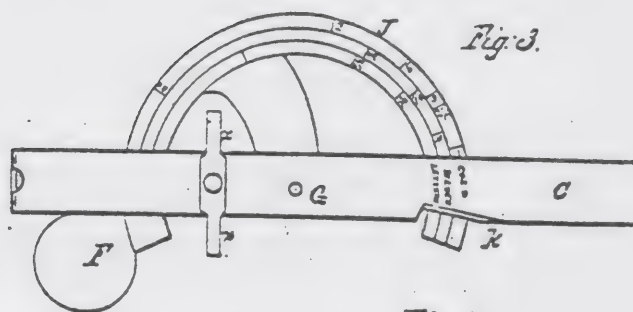
SUMMARY OF PATENTS FOR
COMBINATION COUNTERFEIT COIN DETECTING
MECHANISMS AND POSTAL SCALE
(Arranged in Chronological Order of Patent Date)

| NO. | TITLE | PATENTEE | PAT. NO. | DATE |
|-----|--|---------------|----------|----------------|
| 2 | Postal Scale and Counterfeit Coin Detector | H. Maranville | 203,057 | Apr. 30, 1878 |
| 3 | Counterfeit Coin Detector | Edwin Street | 209,185 | Oct. 22, 1878 |
| 4 | Combined Scale and Coin Tester | George Hoag | 216,184 | June 3, 1879 |
| 5 | Coin Detector | E. Bachmann | 285,204 | Sept. 18, 1883 |
| 6 | Combined Letter Scale and Coin Tester | E.C. Purnelle | 292,763 | Jan. 20, 1884 |
| 7 | Coin and Letter Scale | C. Richtman | 295,809 | Mar. 25, 1884 |
| 8 | Letter Scale and Coin Tester | E. Knight | 388,138 | Aug. 21, 1888 |

No. 89,890.

PATENTED SEPT. 16, 1893.

D. CUMMING, JR.
COIN AND LETTER SCALE.



Witnesses;
Steph. M. Smith
L. J. Smith

Inventor;
D. Cumming Jr.

UNITED STATES PATENTS

SECTION 2D

UNITED STATES PATENT OFFICE

DAVID CUMMING, JR., OF NEW YORK, N.Y.

IMPROVEMENT IN COIN AND LETTER SCALES.

Specification forming part of Letters Patent No. 39,890, dated September 15, 1863; antedated February 2, 1863.

To all whom it may concern:

Be it known that I, DAVID CUMMING, JR., of New York, county and State of New York, have invented a new and useful Improvement in Coin and Letter Scales; and I do hereby declare that the following is a full, clear and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which-

Figure 1 is a perspective view; Fig. 2, a longitudinal elevation, and Fig. 3 a horizontal plan of the top.

The same letters refer to corresponding parts in the same different figures.

A is the standard, with the bearings B B, on which the knife edges x x rest. The knife edges are firmly secured to the beam C. on end of which has the spring-holder D swinging freely from it on a knife edge. F is a weight, which is attached to the beam by the pivot G. The weight moves freely on the pivot, and is held where required by the spiral spring H on the pivot. Attached to the weight is the curved plate J, containing the marks and figures of the denominations of the different coins, and also the marks and figures indicating an ounce and parts of an ounce for weighing letters.

Manner of working: The coin to be weighed is placed in the spring-holder, and the weight moved around on the pivot until the mark of the denomination of the coin on the curved plate is directly under the index K on the beam. If the coin is of proper weight, the beam will be inclined toward the end on which the coin hangs. Letters are weighed in the same manner.

The machine has been tried and works well, and can be manufactured at a small cost.

What I claim as new, and desire to secure by Letters Patent, is-

PATENT NO. 39.890 - continued

Manner of working: The coin to be weighed is placed in the spring-holder. and the weight moved around on the pivot until the mark of the denomination of the coin on the curved plate is directly under the index K on the beam. If the coin is of proper weight, the beam will be inclined toward the end on which the coin hangs. Letters are weighed in the same manner.

The machine has been tried and works well. and can be manufactured at a small cost.

What I claim as new, and desire to secure by Letters Patent, is-

The pivoted weight F and curved plate J, operated substantially as described, and for the purpose set forth.

D. CUMMING, JR.

Witnesses:

STEPH. WM. SMITH,
J. S. TUTTLE.

H. MARANVILLE.
 Postal-Scale and Counterfeit-Coin Detector.
 No. 203,057. Patented April 30, 1878.

Fig. 1

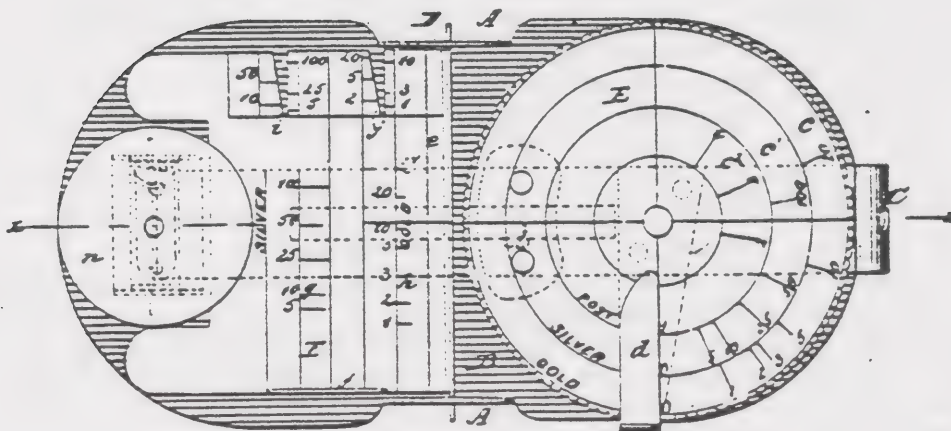
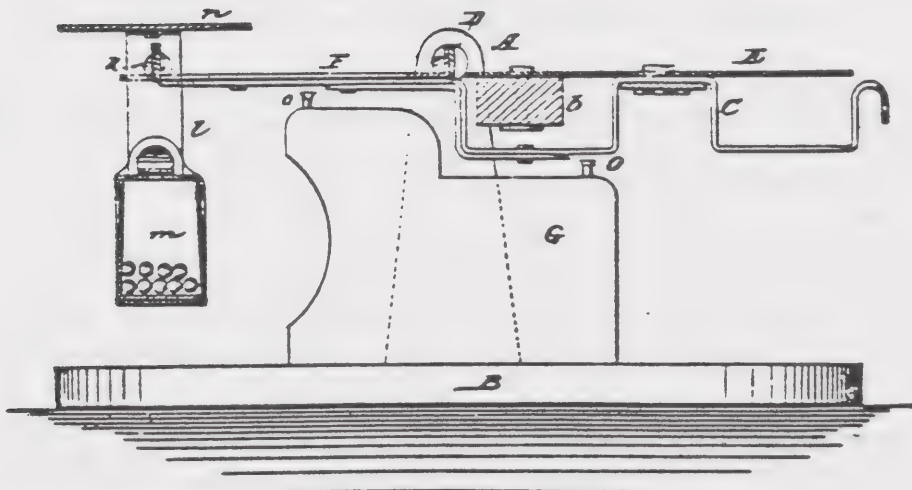


Fig. 2



WITNESSES:
Francis McAnally
C. Sengier

INVENTOR:
H. Maranville
 BY *Munn & Co.*
 ATTORNEYS.

UNITED STATES PATENT OFFICE

HARVEY MARANVILLE, OF AKRON, OHIO, ASSIGNOR TO
HIMSELF AND SAMUEL D. STEWART, OF SAME PLACE

IMPROVEMENT IN POSTAL-SCALE AND
COUNTERFEIT-COIN DETECTOR.

Specification forming part of Letters Patent No. 203,057,

dated April 30, 1878; Application filed March 7, 1878

To all whom it may concern:

Be it known that I, HARVEY MARANVILLE, of Akron, in the county of Summit and State of Ohio, have invented a new and useful Improvement in Scales, of which the following is a specification:

Figure 1 is plan view of my improved scales. Fig. 2 is a longitudinal section.

Similar letters of reference indicate corresponding parts.

The object of my invention is to provide scales for testing coin and weighing small articles, more especially coin and mail matter; and it consists in a beam having upon one end a graduated rotating disk, which carries the counterpoise, and upon the other end a scale for measuring the diameter and thickness of coin, and a pivoted platform for receiving the coin or package to be weighed.

Referring to the drawing, A A are standards projecting perpendicularly from the base B, and C is a beam attached to a cross-bar, D, the edges of which are V-shaped and have a bearing in apertures in the standards A.

A disk, E, pivoted to the beam, C, and carries on its under surface a weight, b. The beam is bent or offset to permit of turning the disk, and the upper face of the disk is provided with three sets of graduations- one set for gold, one for silver, and one for mail matter.

The outer circle, c, on the disk is graduated for gold, the first graduation being one dollar, the second for two and one-half dollars, the third for five dollars, the fourth for ten dollars, and the fifth for twenty dollars, and so on. The second circle c^1 , is graduated for silver, the first graduation being for five cents, the second for ten cents, and so on. The third and inner graduation. c^2 represents weights corresponding to certain rates of postage, the first or zero graduation representing a package having a weight that requires one three-cent stamp, the second graduation representing a weight that requires two three-cent stamps, the third three three-cent stamps, and so on.

PATENT NO. 203,057
[CHP. II : SEC. 2D]

[II-2D-5A]

An arm, d, is attached to the beam C, and extends over the upper face of the disk E, and serves as an index in adjusting the disk. Upon the opposite side of the cross-bar D, there is a plate, F, which is provided with two lips, e, f, against which to place the coin in measuring for diameter. The lip e is riveted to the bar D, and the lip f is at right angles to it.

Upon the face of the plate F there are two sets of graduations—one set, g, for silver coin, and the other set, h, for gold coin. The graduations for silver coin range from five cents to one dollar, and the graduations for gold coin range from one to twenty dollars.

In the edges of the plate F, opposite the lip f, two V-shaped notches, i, j, are formed. The notch i, which is for the measurement of the thickness of silver coin, is graduated for five, ten, twenty-five, fifty cents and one dollar. The notch j is graduated for the measurement of the thickness of gold coin, the graduations being for coins from one to twenty or fifty dollars.

The end of the beam C projects upward through a notch in the outer edge of the plate F, and to it is riveted a bar, k, whose upper edge is V-shaped. A stirrup, l, having apertures for receiving the ends of the bar k, is supported by said bar, and has attached to it, below the pivot, a box m, for containing shot or sand for adjusting the scale and for keeping the stirrup in a vertical position. A disk, n, is attached to the upper end of the stirrup, for receiving coin or other articles to be weighed.

When it is desired to weigh an article, the disk E is turned until the proper graduation appears at the indicating-bar d, when the weight b will be in proper position to counterbalance the article. Coin is measured as to thickness by the V-shaped notches i, j, and its diameter is measured upon the scales g, h, by placing them against the lip f.

A block, G, is placed under the beam C, and in it there are two screws, o, one each side of the bar D, for limiting the motion of the beam

The advantages claimed for my improved scale are that it is convenient, simple, and accurate, and, as all of the parts are connected together, none of them can be lost.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In scales, the beam C, having an upwardly-convex middle bend that supports on a pivot the disk, E, and concavities on each side to allow the passage of a weight, b, as set forth.

PATENT NO. 203,057 - continued

2. The combination of the graduated disks E and plates F, supported on beam C, the former having weight b, and the latter a stirrup, as and for the purpose specified.

HARVEY MARANVILLE.

Witnesses:

GEO. G. ALLEN,

G. S. SCOTT.

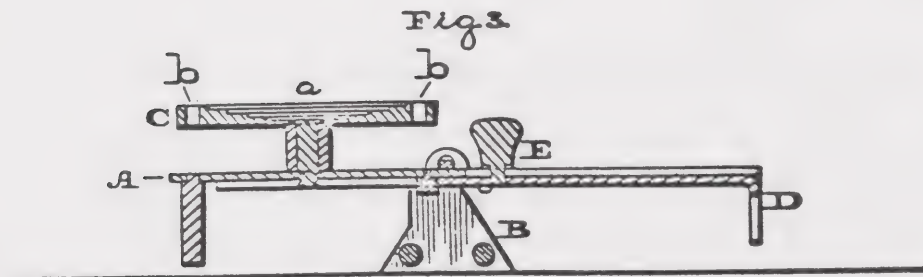
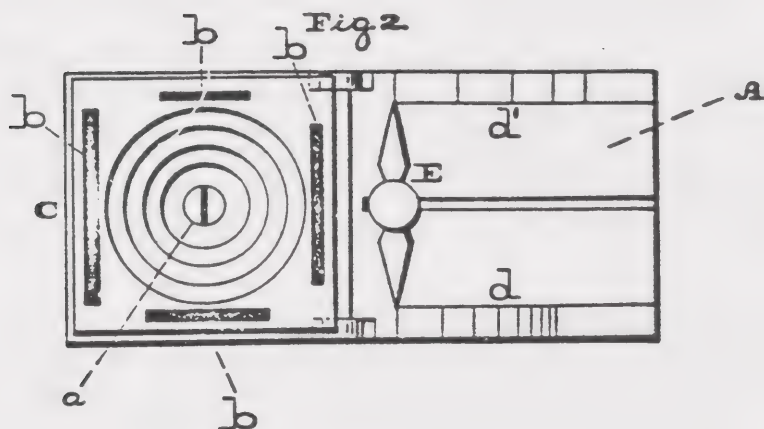
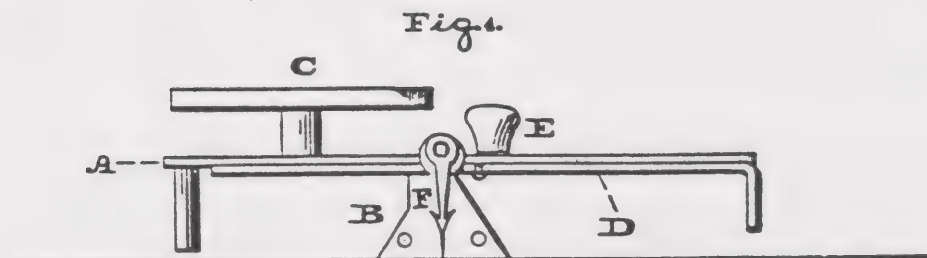
AUTHORS' COMMENT

As has been previously noted, the actual devices did not always conform to the patented descriptions. This Maranville patent is an excellent example of that. Here the patent called for a device to act as a counterfeit coin detecting mechanism and a letter scale. Yet those who possess examples have not seen any like the patented device. All known devices are for detecting counterfeit coins only. In addition, all known devices have an index for the U. S. three dollar gold coin even though the patent papers make no reference to it.

E. STREET.
Counterfeit Coin Detector.

No. 209,145.

Patented Oct. 22, 1878.



Witnesses:
Lewis F. Brown,
Ro. P. Grant.

Inventor:
Edwin Street,
by *John A. Frederickson*
Attorney.

UNITED STATES PATENT OFFICE

EDWIN STREET, OF SOUTH ORANGE, NEW JERSEY

IMPROVEMENT IN COUNTERFEIT-COIN DETECTERS.

Specification forming part of Letters Patent No. 209,145,
dated October 22, 1878; application filed March 1, 1878

To all whom it may concern:

Be it known that I, EDWIN STREET, of South Orange, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Letter-Scale and Coin-Detecter, which improvement is fully set forth in the following specification and accompanying drawings, in which-

Figure 1 is a side elevation of the scale and detector embodying my invention. Fig. 2 is a top view thereof. Fig. 3 is a longitudinal vertical section thereof.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of an implement adapted for the combined purposes of weighing letters and indicating the character of coin.

I employ a plate with a slide, an index, and an elevated tray with concentric concavities and slots, the operation whereof will be more fully set forth.

Referring to the drawings, A, represents a poise or balance-plate, and B the standards thereof. On one side of the plate A there is supported a tray C, on whose upper face is a series of concentric concavities, a, which increase in depth and are of diameters corresponding to those of various denominations of coin to be weighed, so that genuine coin will exactly fit the relative concavity.

In the tray thereof are also formed slots b, of dimensions corresponding to the thickness of genuine coin, whereby the latter will exactly fit the relative slot. To the plate A, on the side opposite to the tray C, there is fitted a slide, D, which carries a double index, E, overhanging the respective portion of the plate A, and pointing to postal and coin graduations d d formed on the said portion of the plate, the index being preferably constructed of spring metal, so as to produce friction between the plate and the slide and prevent accidental movement of the latter during operations of the weighing letters or detecting coin.

In order to weigh a letter, the latter is placed on the tray C, and the slide D is moved until the plate is balanced, the tray being elevated to prevent contact of the letters, &c., with adjacent parts of the device. The

PATENT NO. 209,145
[CHP. II : SEC. 2D]

[II-2D-8A]

weight of the letter may now be readily read off by observing the location of the index on the graduation or postal scale d.

When the coin is to be weighed the scale will be moved to bring the index over the graduations d', opposite the one corresponding to the weight of a genuine coin. If the scale is in equilibrium, the coin may be considered genuine, subject to the further test of the manner in which the coin fits the relative concavity and the slot b.

It will be noted that the slide D constitutes the counterpoise of the scale, thus dispensing with separate weights, and that the coins of different denominations are weighed on the same tray C, thus producing a simple and compact implement for the purposes intended.

For delicate weighing of the coin and letters, I employ an auxiliary index or finger, F, which is secured to the axis of the plate A and sweeps over the adjacent standard B, having a central mark or characteristic for indicating the true weight of a genuine coin or registering with the graduations d d' of the plate A.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is-

The plate A and slide D, in combination with the elevated tray C, provided with concentric concavities a and surrounding slots b, substantially as and for the purpose set forth.

EDWIN STREET.

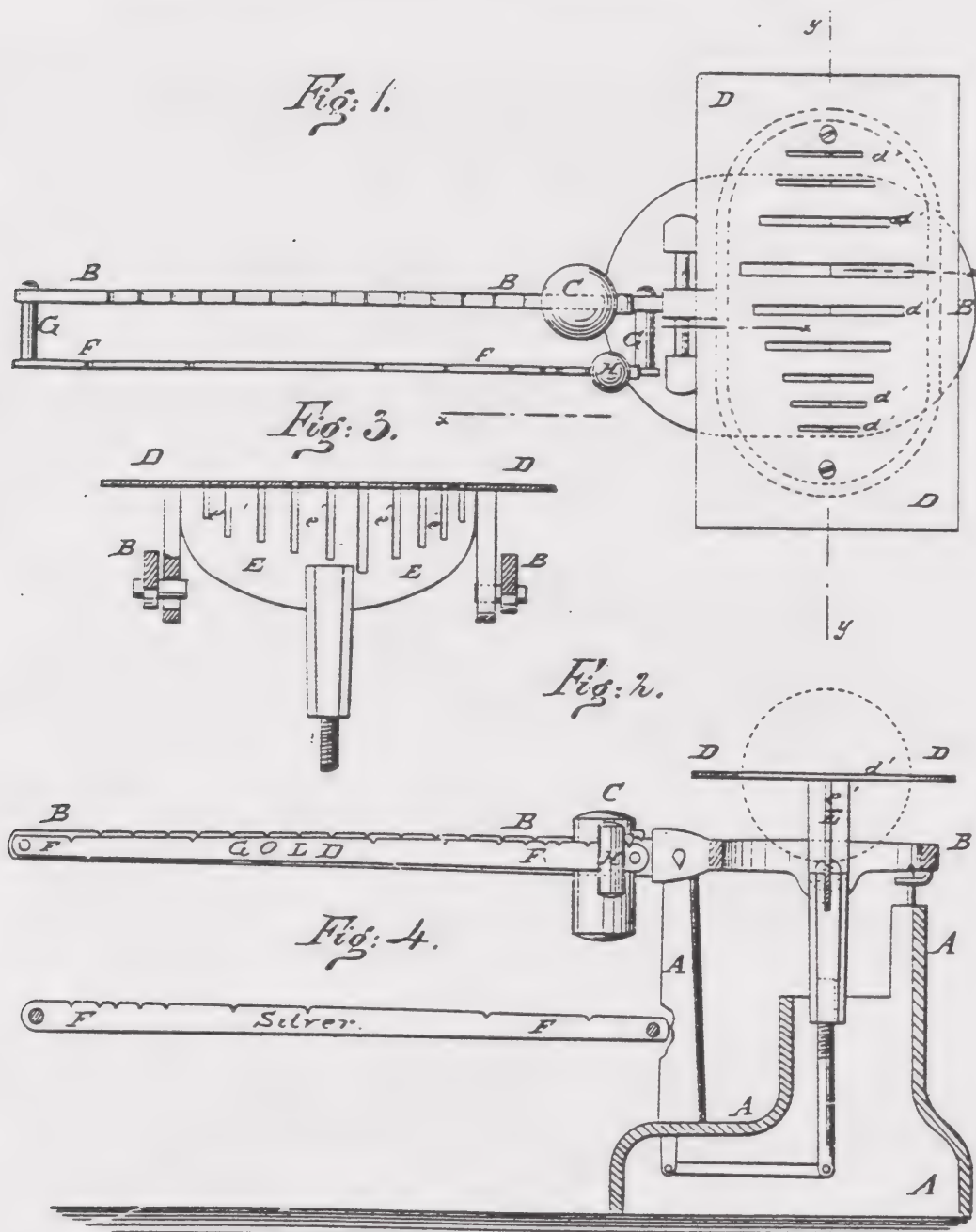
Witnesses:

ROBERT H. POLLOCK,
ELI LONG.

G. HOAG.
Combined Scale and Coin Tester.

No. 216,184.

Patented June 3, 1879.



WITNESSES:
Chas. N. Hoag
Co. Sec. Gen.

INVENTOR:
G. Hoag
BY *McIntosh*
ATTORNEYS

UNITED STATES PATENT OFFICE

GEORGE HOAG, OF NEW YORK, N.Y.

IMPROVEMENT IN COMBINED SCALE AND COIN-TESTER

Specification forming part of Letters Patent No. 216,184.
dated June 3, 1879: application filed March 27, 1879

To all whom it may concern:

Be it known that I, GEORGE HOAG, of the city, county, and State of New York, have invented a new and Improved Combination Scale and Coin-Tester, of which the following is a specification.

Figure 1 is a top view of improved device. Fig. 2 is a view of the same, partly in section, through the broken line x x, Fig. 1. Fig. 3 is a detailed cross-section of the same, taken through the line y y, Fig. 1. Fig. 4 is a detailed view of the reverse side of the coin-scale beam.

Similar letters of reference indicate corresponding parts.

The object of this is to furnish scales for weighing letter and other mail-matter which shall be provided with appliances for testing the weight, size, and thickness of coins, and which at the same time shall be simple in construction and convenient and reliable use.

The invention consists in the combination of the slotted vertical plate with the slotted scale-pan of a scales, for testing the size and thickness of gold and silver coins: and in the combination of a second beam and its weight with the main beam and its weight, and with the scale-pan provided with the slots for testing the weight, the size, and the thickness of gold and silver coins, as hereinafter fully described.

A represents the standard, B the main beam, C the weight, and D the pan or platform, of the scales, which parts are connected together and balanced in the usual way.

The scale-pan D is made flat, and has a series of slots, d', formed through it to receive the different gold and silver coins, the slots towards one end of the pan D being intended for gold coins, and those towards the other end being intended for silver coins. The slots d' are made of a length and breath equal to the diameter and thickness of the various coins, so as to test their size and thickness.

To the central part of the lower side of the pan D is attached the upper edge of a vertical plate, E, which has slots c' formed in it directly beneath the slots d' of the said pan D. The slots c' are made of a breath equal to the breath of the slots d' and of a depth equal to half the length

PATENT NO. 216,184
[CHP. II : SEC. 2D]

[II-2D-10A]

PATENT NO. 216,184 - continued

length of the said slots d', so that the coins will be held with their diameters in line with the scale-pan D.

F is the beam which is used for testing the weight of the coins, and which is connected at its ends with the main beam B by bolts, screws, or rivets G. The beam F is provided with a weight, H, for balancing the coins. In the upper edge of the beam F are formed notches at the various points where weight H should stand to balance the various coins.

The notches for the gold coins should be marked upon one side of the beam F, and the notches for the silver coins should be marked upon the other side of said beam, with the value of the coins to which they belong.

The slots d' in the scale-pan D may also be marked with the value of the coins to which they belong.

With this construction the device, while serving as a scale for weighing letter and other mail-matter, also serves as a test for the size, the thickness, and the weight of gold and silver coins.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent-

The combination of the scale-pan D, consisting of a horizontal plate, provided with slots d', and the vertical plate E, provided with the slots c', and the supplemental scale-beam F, secured by the bolts G to the scale-beam B, so as to be parallel with the said beam, and provided with the weight H, with the main beam B and its weight C, substantially as and for the purpose set forth.

GEORGE HOAG.

Witnesses:

JAMES T. GRAHAM,
C. SEDGWICK.

AUTHORS' COMMENT

An illustration in Chapter IV shows a Hoag Patent device, made by Fairbanks with the Patent date of June 3, 1879 which is the correct date for the Hoag patent. Also shown in Chapter IV is an illustration of a mechanism made by Fairbanks, but without any patent date and with a single beam to be used as a counterfeit coin detector, but the person who at one time owned it has cut into the single beam a number of notches from 1 to 7 ounces in order to use the device for weighing mail.

PATENT NO. 216,184 - continued

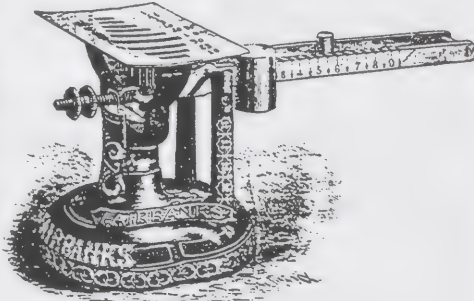
The E. and T. Fairbanks & Co. of St. Johnsbury, Vermont catalogue *FAIRBANKS STANDARD SCALES* of June 1, 1893 lists no HOAG patent counterfeit coin detector. The E. and T. Fairbanks and Company of St. Johnsbury, Vermont catalogue of 1903 *FAIRBANKS STANDARD SCALES* lists the single and double beam types with the rectangular base as shown in Chapter IV. To further complicate the matter, The Fairbanks Company, New York, *Illustrated Catalogue and Price List of Supplies* dated 1906 lists the double beam combination "Postal and Coin" scale at five dollars in brass. There is no listing of a coin scale without the postal combination.

The beautifully decorated, double beamed detector and postal scale with the cast iron, oval base, clearly marked *FAIRBANKS* in the casting and again in the painted decoration, is still an open question as to which *FAIRBANKS* made it.

Publicity for the item was extensive as indicated in the following advertisement in the November, 1883, *Underwood Reporter Co.*

THE
POSTAL COIN SCALE.

UNITED STATES GOVERNMENT STANDARD.



INDISPENSABLE TO ALL BANKERS AND BROKERS.

Gives Weight, Diameter, and Thickness of all Gold and Silver Coins.

MANUFACTURED BY FAIRBANKS & CO.

SENT PREPAID TO ANY ADDRESS IN THE UNITED STATES ON RECEIPT OF \$5.

Make Drafts, Checks, or Money Orders payable to and address the special agents,

UNDERWOOD REPORTER CO.,
18 Spruce St. New York City.
P. O. BOX 2624.

PATENT NO. 216,184
[CHP. II : SEC. 2D]
[II-2D-12]

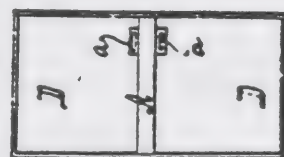
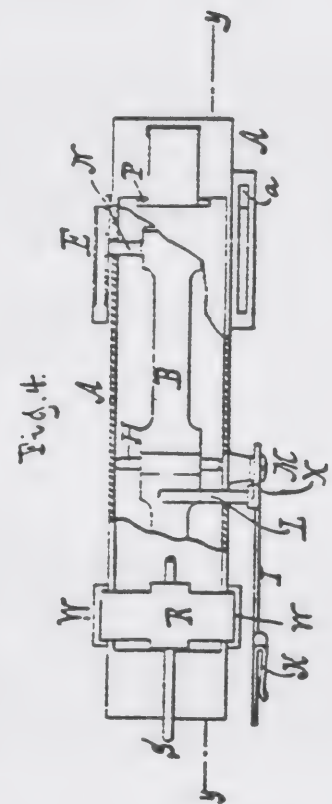
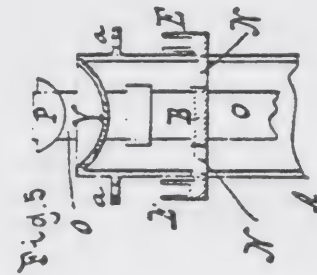
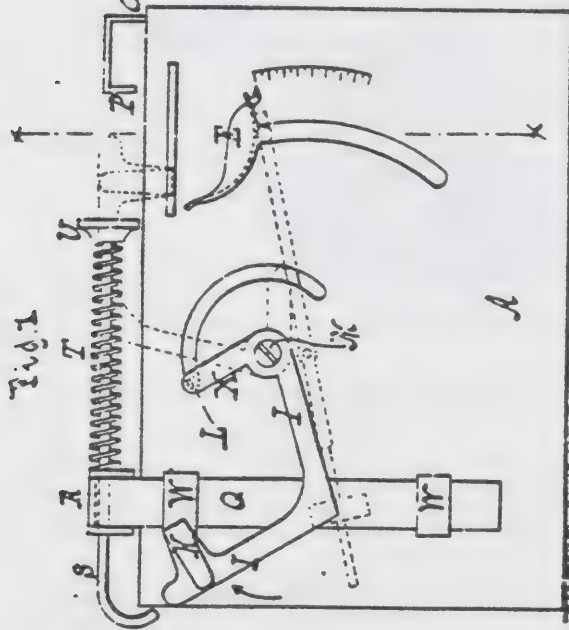
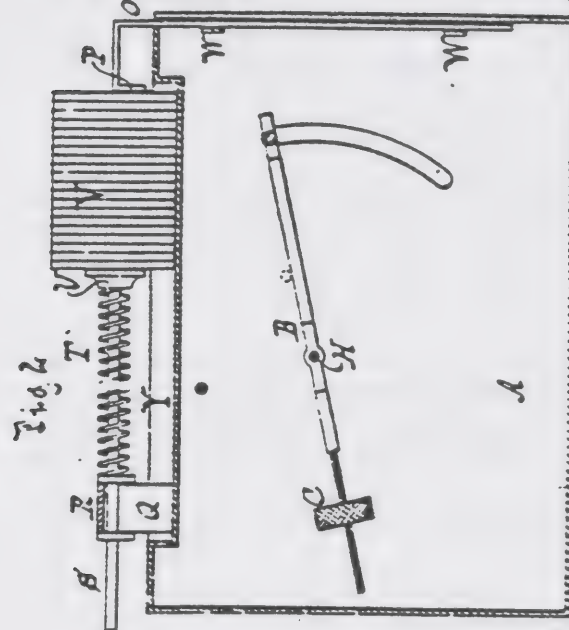
(Model.)

E. BACHMANN.

COIN DETECTOR.

No. 285,204.

Patented Sept. 18, 1883.



WITNESSES:

Otto Aufeland
William Miller

Fig. 5

INVENTOR

Emil Bachmann
BY *Von Gutzkow & Hauff*

ATTORNEYS

UNITED STATES PATENT OFFICE
EMIL BACHMANN, OF NEW YORK, N. Y.

COIN-DETECTOR

SPECIFICATION forming part of Letters Patent No. 285,204,
dated September 18, 1883. Application filed June 14, 1883. (Model)

To all whom it may concern:

Be it known that I, EMIL BACHMANN, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Coin-Detectors, &c., of which the following is a specification.

This invention relates to coin-detectors; and it consists in the combination, with coin-tester, of a letter-weighting device, which may be brought into operative connection therewith; also, in providing such a detector with a coin-holder or roll, and in the novel features of construction: and arrangement hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side view of the detector. Fig. 2 is a section in the plane y y, Fig. 4. Fig. 3 is a plan view of the detector and continuous money-receptacles. Fig. 4 is a plan view of the detector with the inclosing case partly broken away. Fig 5 is a section in the plane x x, Fig. 1, partly broken away.

Similar letters indicate corresponding parts. A indicates an inclosing, made of sheet metal or other suitable material. Within this case, about a fulcrum or pivot, H, swings or oscillates a lever. B. which is provided with a weight, C, which weight being mounted on a screw-thread, as shown. may be adjusted nearer to or farther from the fulcrum H of the lever B, thus varying the efficiency of its action, as will be readily perceived. The other end of the lever B is provided with pans E E, supported on arms N N, projecting through slots in case A. and said arms N, N, are placed at varying distances from the fulcrum or pivot H, of the lever. The object of this arrangement is that the pan E. which is supported on the arm N nearer to the fulcrum or pivot H, will require a heavier coin to depress the lever B than the pan supported on the arm N farther from the pivot H. Each lever B is thus adapted for weighing coins of two different denominations, thus economizing space. In practice it will be well to make the arms N adjustable on the lever B by a screw-thread, or by a screw passing through a slot, or by any other means readily attainable by a mechanic, so that each arm N, with its pan E, may be adjusted just such a distance from the fulcrum H as is necessary to enable the coin intended to be tested to depress the lever B sufficiently to allow the coin to drop off the pan into one of the respective receptacles D D, Fig. 3

PATENT NO. 285.204 - continued

Above the pans E, and projecting from the side of case A, are slotted tongues, forming inlet throats a a, Fig. 3, and these inlet-throats are made of such a width as to allow only a certain size of coin to pass through, for the weighing of which particular coin the pan E immediately under said throat a is to be adjusted. The device thus serves both as a coin-detector and as a gage.

The lever B is shown as being straight; but it may be curved or shaped in any desired manner.

Swinging about a pivot, M, at the side of the case is a scale-beam or lever-arms, I X, the arm X of which a finger or stud, L, passing through a slot in a case, A, sufficiently far that when the lever arms I X are swung up in the direction of the arrow, Fig. 1, to the position shown in dotted lines, the finger L, will strike upon the lever B. The arm I is provided with a hook or attaching device, K, into which a letter or other article may be inserted, and the action of the finger L on lever B will cause such letter or articles to be weighed. The hook or attaching device K, may be made adjustable at varying distances from the pivot M, so as to secure accuracy in the operation of weighing.

The top of the case A, is provided with a channel or holder, Y, in which may be placed coins, V, Fig. 2. Sliding in guides W are arms or supports O, Q. The arm O supports a washer or finger, P, while the arms Q supports a bridge, R, through which slides a finger, S, provide with a washer, U. A spring, T, tends to force the washer U toward the washer P, thus compressing or holding a roll of coins, V, which may be placed between them, and keeping them ready for being done up in a paper wrapper, if desired, which paper wrapper may be placed in the channel Y under the coins V. The arms O Q, sliding in the guides W, allow the compressing device to be adjusted to varying heights from the top of the case A, or, if not in use, to be pushed down into the channel Y.

I am aware that it is not new to have a coin detector and receiver combined, as such is shown in United States Letters Patent No. 203,719, of May 14, 1878.

The advantages of my device are it can be made compact in form, taking up very little room and wasting no space, and it serves the various purposes of money-drawer, money-gage, money-scale for varying denominations, money-roller, and letter scale, while adjustable parts allow compensation for any wear of the apparatus.

What I claim as new, and desire to secure by Letters Patent, is-

PATENT NO. 285,204 - continued

1. A coin-detector consisting of the case having a weighted lever, B, carrying pans E E, arranged as described, and having the coin-holder consisting of a channel, Y, and compressors U, P, each supported upon a vertical -adjustable arm or slide, substantially as described.
2. In a coin-detector, the combination, with the weighed lever B, of a bent arm, I, having clasp K, and pivoted upon shaft M, and the arm N, rigid with the arm I, having stud L, which rests upon the beam B when the arm I is turned into position for use, substantially as described.
3. In a coin-detector, the combination, with a weighed-lever, B, provided with pans E, of arms or scale-beam I,X, adapted to engage with said weighed lever B, substantially as and for the purpose set forth.
4. In combination with a coin-detector, a money-roller consisting of a holder or channel, Y, and compressors U, P, arranged and adapted to operate substantially as set forth.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

EMIL BACHMANN. [L.S.]

Witnesses:

W. HAUFF,

D. VAN SANTVOORD.

(No Model.)

E. C. PURNELLE.

COMBINED LETTER SCALE AND COIN TESTER.

No. 292,763.

Patented Jan. 29, 1884.

Fig. 1

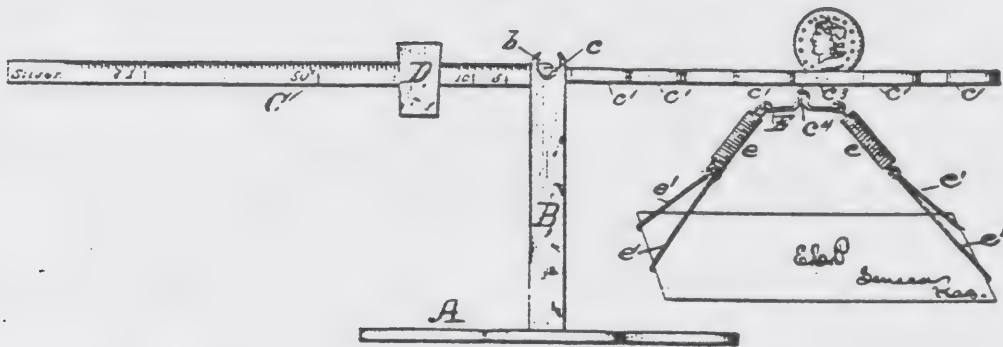
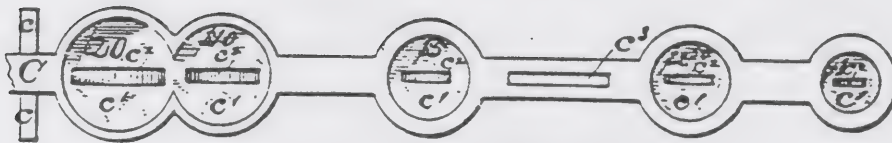


Fig. 2.



Witnesses:
L. C. Hills.
E. L. Mason

Inventor
E. C. Purnelle
By E. C. Stocking
Att'y

UNITED STATES PATENT OFFICE

EDWARD C. PURNELLE, OF SENECA, KANSAS.

COMBINED LETTER-SCALE AND COIN-TESTER

SPECIFICATION forming part of Letters Patent No. 292,763,
date January 29, 1884. Application filed July 18, 1883. (No Model)

To all whom it may concern:

Be it known that I, EDWARD C. PURNELLE, a citizen of the United States, residing at Seneca, in the county of Nemaha and State of Kansas, have invented certain new and useful Improvements in Combined Letter-Scales and Coin-Testers, of which the following is a specification, reference being had to the accompanying drawings in which-

Fig. 1 is a side elevation of a letter scale and coin-tester constructed in accordance with my invention, and Fig. 2 is a plan of the coin-holding portion of the scale-beam.

Like letters refer to like parts in both figures.

A represents the base, and B the pedestal, either or both of which may be made of metal or glass, and in any design according to the taste of the manufacturer. The pedestal is slotted or notched at its upper end to receive the beam C, and a transverse slot or groove, b, is formed for the reception and support of the knife-edged trunnions c, of the beam. The beam is graduated to ounces and fractions of ounces, and also bears indicating marks so located relative to the trunnions as to balance the weight of silver coins of the various denominations when one of such coins is in its proper place (slot c²) in the coin portion of the beam, and when the weight D is at the proper one of said indicating-marks, as clearly indicated in the drawings. The coin portion of the beam is provided with circular depressions or cups c', each adapted to receive one denomination of gold coin, and within said cups are slots c², of a width equal to the coin which fits each of said cups, whereby any lacking in diameter or thickness of any coin placed therein is immediately detected, while a lack of weight in any such coin is indicated by the depression of the opposite portion of the beam when the weight D is at O. This latter result is accomplished in spacing the cups, or, in other words, locating them at such distances from each other that when the weight D is at O and a coin of gold is in its proper cup the beam is exactly balanced. At c³ in the connecting-strip of two of the coin-cups is a slot, in which silver coin is placed edgewise, when its weight is to be tested by moving the weight D to the proper indicating-marks on the beam.

PATENT NO. 292,763
[CHP. II : SEC. 2D]

[II-2D-16A]

PATENT NO. 292,763 - continued

At c⁴ and upon the under side of the coin-testing portion of the beam is a hook or other suitable device, upon which is placed a yoke, E, of wire or other suitable material, to either end of which are secured coiled springs e, each of which is provided with two independent hooks or grapples, e' e' these parts constitute the means employed for weighing letters and other mailable matter.

By the expansion of the springs e when under strain, the grapples e' are adapted to be placed in contact with the articles or varied size, so as to automatically and firmly grasp and hold the same while being weighed.

Having described my invention and its operation, what I claim is-

1. The combination of beam C, provided with silver-coin weight-graduations and gold-coin receptacles, spaced as described, and the weight D, substantially as specified.
2. The combination of the beam C, provided with the hook c¹, the yoke E, coiled springs e, and grapples e', substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD C. PURNELLE.

Witnesses:

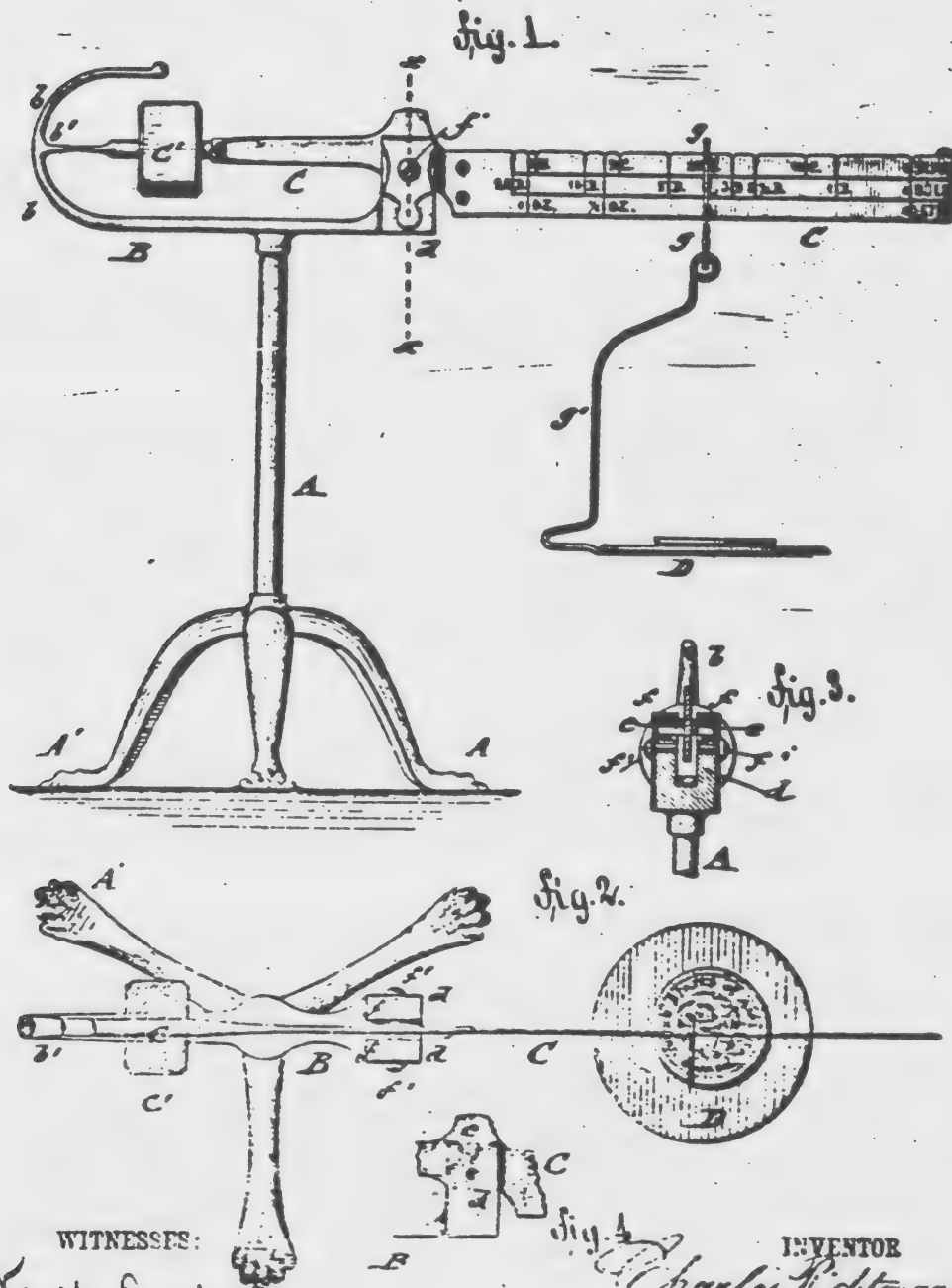
R. M. EMERY,
R. T. LUDLOW.

(No Model.)

C. RICHTMANN.
COIN AND LETTER SCALE.

No. 295,809.

Patented Mar. 25, 1884.



WITNESSES:

J. H. Rosenthal
Otto Risch

INVENTOR

BY

Charles Richtmann
Joseph P. Rogers
ATTORNEYS.

UNITED STATES PATENT OFFICE

CHARLES RICHTMANN, OF NEW YORK, N. Y., ASSIGNOR
TO H. RICHTMANN & CO., OF SAME PLACE

COIN AND LETTER SCALE

SPECIFICATION forming part of Letters Patent No. 295,809,
dated March 25, 1894. Application filed October 11, 1883. (No Model)

To all whom it may concern:

Be it known that I, CHARLES RICHTMANN, of the city, county, and State of New York, have invented certain new and useful Improvements in Coin and Letter Scales, of which the following is a specification.

This invention has reference to an improved Coin and letter scale, which in contradistinction to the letter-scales heretofore in use, is made with one fulcrum only and capable of a high degree of accuracy.

The invention consists of a supporting standard having a horizontal bar that has a hooked-shaped guard at one end, provided with a central index-point for the inner weighted end of the oscillating scale-beam, and that has at the other end bearings for the knife-edge pivots of the same. The outwardly extending opposite end of the scale-beam is provided with graduations and notches for coins and letters of certain weights which graduations extend inwardly from the outer end toward the fulcrum, while the notches serve for recessing the sliding link of a scale-pan suspended from the beam.

In the accompanying drawings, Figure 1 represents a side elevation of my improved coin and letter scale. Fig. 2 is a plan of the same, partly in section. Fig. 3 is a detail vertical transverse section on line x, x, Fig. 1; and Fig. 4 is a detail side view, showing the bearings and knife-edged pivots of the scale-beam.

Similar letters of reference indicate corresponding parts.

A in the drawing represents an upright supporting standard, which is supported on feet A' or on a suitably-weighted base.

To the upper end of the standard A is applied a horizontal arm, B, which is bent at one end into the shape of a semicircular hook or guard, b, at the center of which is arranged an inwardly-extending index or pointer, b'. At the opposite end of the horizontal arm B are arranged vertical bearings d d for the knife-edged pivots e e of a scale-beam, C, which is made tapering at the end adjoining the index b'. A weight, C', is arranged at the inner end of the scale-beam C, which is adapted to oscillate vertically between the end of the hook or guard b and the horizontal arm B, which acts thereby as stops to limit the oscillation of the scale-beam. The bearings d

PATENT NO. 295,809
[CHP. II : SEC. 2D]

[II-2D-18A]

- d are provided with tapering recesses, e' for the knife-edged pivots or fulcrum, e, of the scale-beam which pivots are retained in said recesses e' by angular cap-plates f f which are secured by fastening screws f' to the outside of the bearings, d d their upper ends lapping over the bearings d d and the pivots e e of the scale-beam, as shown in Fig. 3. By this arrangement the scale-beam is retained in position, and cannot be removed from the horizontal supporting arm B. The outer end of the scale-beam C is provided with a series of graduations or scales extending from the zero-line near the outer end of the beam toward the fulcrum thereof. The upper series or scale C', is arranged to indicate the weights of silver coins, the middle scale, C², to indicate the weights of gold coins and the lower scale, C³, is graduated to serve as a letter-scale. The graduations of the upper scale are marked, respectively, "10 c." for ten cents, "25 c." for twenty-five cents, "50 c." for fifty cents, and "1 D." for one dollar, and the upper edge of the scale-beam is provided with notches corresponding with these graduations. The graduations of the middle scale are marked "1 D." for one gold dollar, "2 1/2 D." for a quarter-eagle, "3 D." for a three-dollar gold-piece, "5 D." for a half eagle, "10 D." for an eagle, and "20 D." for a double-eagle, and the upper edge of the scale-beam is provided with notches to correspond with these graduations. The graduations of the lower scale are marked "1/2 oz." for one-half ounce, "1 oz." for one ounce, and the upper edge of the beam is provided with notches to correspond with these graduations. A slotted slide-link, g, is placed on the beam, and a suspension-arm, g', supporting a scale-pan, D, is attached to the lower end of said slide-link. If the slide-link be placed in the notch of the graduating-line indicating a half-eagle, and one of the latter be placed in the scale-pan, the beam will remain balanced, if the half-eagle be a genuine one, the index b', serving to indicate the slightest deviation. If any other gold coin or a silver coin or a letter be placed on the scale pan and the slide-link adjusted to its proper position, according to the article being weighed, the beam will respond in a very accurate manner, the tapering end of the beam, in connection with the index b', being in alignment with the beam's balanced.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is-

A scale for coins and letters, comprising a supporting standard, a horizontal supporting arm attached to said standard, provided with a hook-shaped guard having inward projection or index at the center of the hook, a scale-beam pivoted in said bearings, one end of which is provided with a weight and adapted to oscillate within the hook-shaped guard, being in alignment with the index thereof when balanced, the outer end of said beam being graduated, a slide-link on said scale-beam, and a scale-pan suspended from said link, substantially as described.

In testimony that I claim the forgoing as my invention I have signed my name in presence of two subscribing witnesses.

Witnesses:

PAUL GOEPEL,
SIDNEY MANN.

CHARLES RICHTMANN.

(No Model.)

E. KNIGHT.

LETTER SCALE AND COIN TESTER.

No. 388,138.

Patented Aug. 21, 1888.

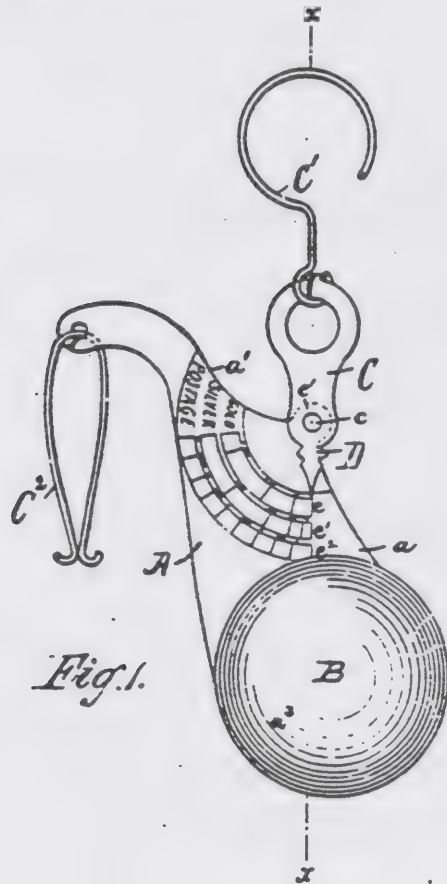


Fig. 1.

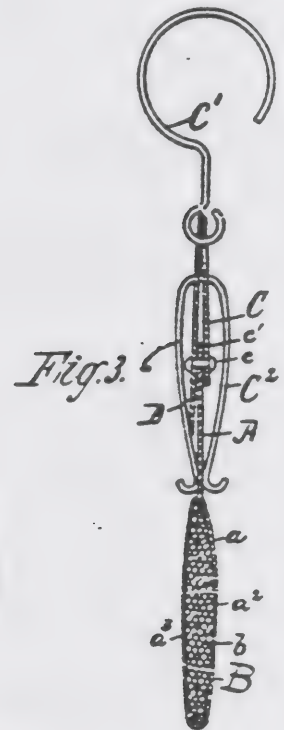


Fig. 3.

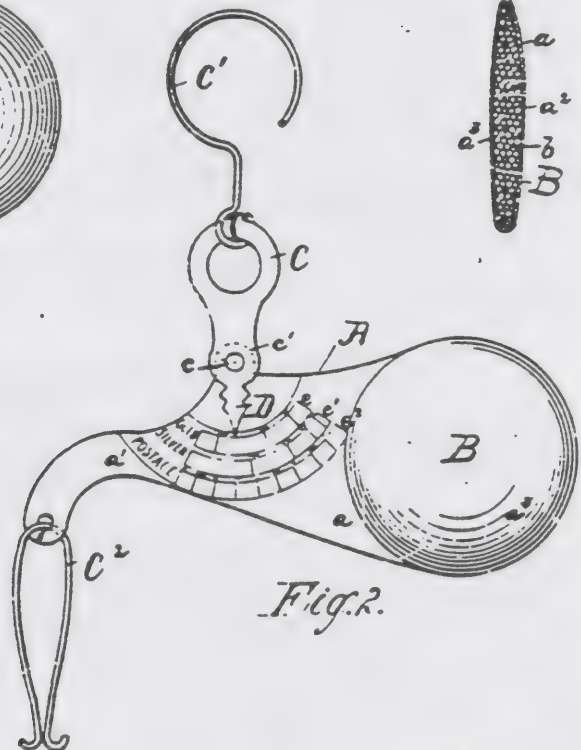


Fig. 2.

Witnesses.
Ch. Benjamin.
A. J. Fales.

Inventor.
Edgar Knight.
By Arthur J. Fitch.
att'y

UNITED STATES PATENT OFFICE
EDGAR KNIGHT, OF SAYBROOK, CONNECTICUT.
LETTER-SCALE AND COIN-TESTER.

SPECIFICATION forming part of Letters Patent No. 388,138,
dated August 21, 1888. Application filed
September 2, 1887. Serial No. 249,369(?). No model)

To all whom it may concern:

Be it known that I, EDGAR KNIGHT, of Saybrook, county of Middlesex, State of Connecticut, a citizen of the United States have invented an Improved Letter-Scales and Coin-Tester, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a combined letter-scale and coin tester; and it consists in the combination of devices hereinafter described, and as more at length recited in the claim.

Figure 1 is a front elevation of the instrument containing my invention, and showing it at rest. Fig. 2 is a similar view of the same, showing it in the operation of weighing; and Fig. 3 is a longitudinal section on the line x x, Fig. 1.

A is the beam, consisting of a metal plate, which is pivoted to oscillate in a clip, C, by means of a pin, c, passed loosely through the beam at c' and through the clip. The upper end of the clip is perforated, as shown, so that the instrument may be suspended by the clip. The clip is desirably furnished with a hook, C', which is loosely linked into the perforated end of the clip as furnishing a convenient means of suspending the clip. The clip is preferably composed of two limbs, as shown, with the beam seated loosely between them. The portion a, of the plate-beam A, contiguous to the fulcrum pin c, is wide faced or broad in extent, and upon this wide faced portion a, I form or place indicator-scales, c, c¹, c², one or more, each in the shape of or describing an arch of a circle of which the fulcrum-pin, c, is the center. The clip C, is extended past the fulcrum-point c, and its extended end lies over the wide-faced scale portion a, of the plate-beam, and constitutes a pointer, D, which ranges over said portion a of the beam when the beam oscillates in the clip.

One end of the plate-beam is weighted, as at B. This may be effected by forming a concavity, a², in the plate, placing therein a corresponding weight, b, and then covering the weight with a cap, a³. A beam of desirable appearance is thus produced. The opposite arm a' of the beam is provided with a holder, C², in the form, preferably, of a spring-wire clip linked loosely to the end of said arm. The arm of a', is desirably narrow, as shown, and has a downward curve at its free end.

PATENT NO. 388,138
[CHP. II : SEC. 2D]

[II-2D-21]

PATENT NO. 388,138 - continued

The indicator-scales c , c^1 , c^2 , each or all, are so arranged on the portion a of the beam relative to the pointer D that when the beam gravitates to rest in the suspending-clip C the said pointer will indicate zero on the scale or scales. The scale c^2 may then be marked or graduated to indicate ounces and fractions thereof for use in weighing postal matter, while the scales c , c' may be graduated to indicate the correct weight of gold and silver coins, respectively, as shown in the drawings.

Heretofore in constructing postal and analogous scales of this description namely, with a suspended beam, a suspending-clip, and a weighted arm on said beam - the indicator scale or scales have been placed upon the face of the extremity of the weighted arm, and an independent pointer has been loosely pivoted upon the face of said arm and allowed to gravitate over said scale or scales for the purpose of indicating the weight of the articles suspended on the opposite arm; but in operating scales thus constructed the pointer is exceedingly liable to get out of proper adjustment relative to the indicator-scales on the weighted arm, and therefore to indicate inaccurately on the scales. By means of an apparatus constructed as I have herein described, the pointer being part of the suspending clip C and ranging over the scale portion a of the beam all liability of inaccuracy is obviated.

I do not claim, broadly, herein the combination, with a pointer carried by the suspending-clip, of a graduated beam over which said pointer ranges, as I am aware that such devices are not new. I intend to limit my claim hereunder to the combination, with the peculiar scale beam shown, consisting of a plate fulcrumed at one edge, between its ends, in a suspending-clip and having one end weighted, of an indicator scale or scales in the form of an arc of a circle of which the fulcrum is the center, on said plate-beam, and having a pointer constituted by an extension of the suspending-clip and ranging over the arc scales on said beam.

What I claim as my invention, and desire to secure by Letter Patent is-

In weighing scales, the combination of the plate A , constituting the scale-beam, and pivoted or fulcrumed at one edge between its ends to the suspending-clip C , and provided with the weight B and the clip C' at opposite ends of said beam, respectively, and having a graduated scale, one or more, in the form of the arc of a circle of which the fulcrum is the center on its side face, as described, with a pointer, D , constituted by an extension of the suspending-clip over the side face of the beam, and adapted to range over the graduated scale, as and for the purpose specified.

EDGAR KNIGHT.

Witnesses:

HENRY KNIGHT,
JOSEPH KELLOGG.

CHAPTER II

UNITED STATES PATENTS

SECTION 2E

MISCELLANEOUS PATENTS

Under this category are placed those devices for which there are patent papers extant, but do not fall within the purview of the previous designations. Here will be found various mechanisms that:

1. only weigh the coins, (basically scales only)
2. devices whereby the coin is bent or broken, if not genuine,
3. testers to determine hardness and *timbre*,
4. devices depending upon galvanic action of gold or silver with zinc,
5. spring activated weighing devices,
6. and similar devices.

Many of these devices are as simple as the zinc washer patented by Baker and Simonton, the device by Towsey whereby the test of the coin was its ability to withstand being broken, to the very complex and complicated mechanism of Parnell which he patented in 1941.

SUMMARY OF PATENTS FOR COIN SCALES AND COUNTERFEIT COIN DETECTING MECHANISMS

MISCELLANEOUS PATENTS (Arranged in Order of Patent Date)

| NO. | TITLE | PATENTEE | PATENT NO. | DATE |
|-----|--|-------------------------------|------------|---------------|
| 1. | Coin Tester | A. Bernstein | 183,833 | Oct. 31, 1875 |
| 2. | Device for Detecting Counterfeit Coin | T. J. Towsey | 187,937 | Feb. 27, 1877 |
| 3. | Coin Tester | G. M. Hopkins | 188,637 | Mar. 20, 1877 |
| 4. | Device for Detecting Counterfeit Coin | A. J. Baker J. W. Simonton | 202,691 | Apr. 23, 1878 |
| 5. | Coin Tester | E. Leuders | 205,492 | July 2, 1878 |
| 6. | Coin Tester & Indicator | G. Smith J. J. Wells | 259,338 | June 13, 1882 |

SUMMARY OF PATENTS FOR
COIN SCALES AND COUNTERFEIT COIN DETECTING MECHANISMS

MISCELLANEOUS PATENTS
(Arranged in Order of Patent Date)

| NO. | TITLE | PATENTEE | PATENT NO. | DATE |
|-----|---|---------------|------------|----------------|
| 7. | Coin Counter and Tester | W. W. Haas | 314,330 | March 24, 1885 |
| 8. | Combined Pencil Holder, Eraser, Etc. | R.W. Riess | 549,534 | Nov. 12, 1895 |
| 9. | Count Checking Device For Packaged Coins | F. E. Finch | 1,903,621 | Apr. 11, 1933 |
| 10. | Coin Tester | W. H. Parnell | 2,350,414 | June 6, 1944 |

A. BERNSTEIN.

COIN-COUNTERS.

No. 183,833.

Patented Oct. 31. 1875.

Fig: 1.

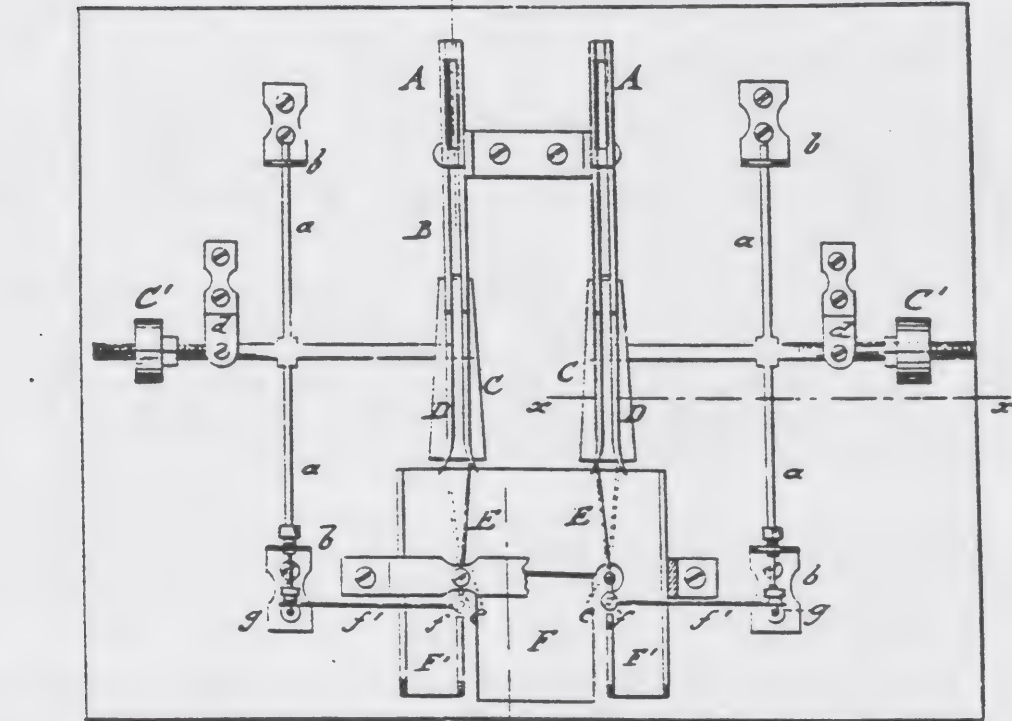


Fig: 2.

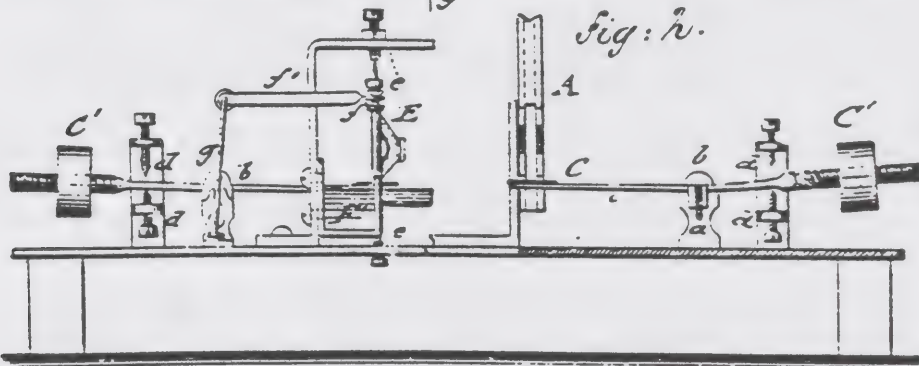
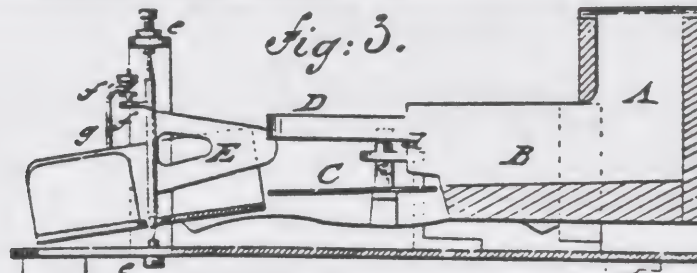


Fig: 3.



WITNESSES:

Chas. Nida
John Bethals

INVENTOR:

A. Bernstein

BY

Munn
ATTORNEYS.

UNITED STATES PATENT OFFICE
ARON BERNSTEIN, OF BERLIN, PRUSSIA.

IMPROVEMENT ON COIN-COUNTERS.

Specification forming part of Letters Patent No. 183,833,
dated October 31, 1876;
application filed September 9, 1876

To all whom it may concern:

Be it known that I, ARON BERNSTEIN, of Berlin, Prussia, in the Empire of Germany, have invented a new and useful Improvement on Apparatus for Separating False and Light Gold Coins of which the following is a specification:

This apparatus has for its object to provide the public with a simple and convenient means of testing, in quick and automatic manner, the genuineness and correct weight of ever gold coin received, without having recourse to gold-scales, which occasion loss of time and disclose a feeling of distrust to toward customers and others, and are, for this reason, but little employed in ordinary business.

The apparatus furnishes a reliable means to instantly detect any false or light gold coin without showing the mode or mechanism by which same the same is tested, so thereby the business man is protected against losses arising from this source.

This object is obtained in the present apparatus by allowing the gold coin to fall through a narrow opening and guide-channel onto a balance or tilter, from which it will, if genuine and of full weight, roll at once, by suitable deviating mechanism, into the cash box or receptacle; but if it is not genuine, or of short weight, it is conducted into a separate open receptacle, so as to indicate directly the lack of genuineness or full weight.

The apparatus may be arranged for gold coins of one, two, or more different denominations - as, for instance, for ten and five dollar gold pieces, or to English, French, or German coins, the apparatus being readily adapted and adjusted for either monetary mint.

As the parts of the apparatus adapted for smaller or larger coins are similar to each other, differing merely slightly in dimensions, it is only necessary to describe one part of the apparatus, the others being more or less identical in construction.

In the accompanying drawing, Figure 1 represents a top view, and Figs. 2 and 3 are vertical longitudinal and transverse sections, respectively, on the on line x x and y y, Fig. 1, of my improved apparatus for separating

PATENT NO. 183,833
[CHP. II : SEC. 2E]

[II-2E-3A]

and detecting false and light gold coins.

Similar letters of reference indicate corresponding parts.

In the drawing, A A are two or more narrow openings or slots, that are preferably arranged in the counter, table, or other article, below which the apparatus is disposed for the purpose of being out of sight. The openings A are of such width and length to correspond exactly to the thickness and diameter of the different gold coins in use. The gold coin is dropped through the opening A, and passed along a vertical guide-channels onto an inclined plane, B, along which it which roll, between guide-arms D, to a balanced plate or piece of metal, C. This plate C forms part of a balance, which is, however, not hung steadily and evenly, as usual in balances, but which is supported by a cross-lever, a, in uneven manner, so that the center of gravity is situated higher than the two hypomochlions b, of the cross-lever. This balance may therefore more properly be called a "tilter". On the arm opposite the plate C, is placed a weight, C', that is adjustable on the threaded arm to such a nicety that a gold coin of proper weight, when it rolls over the plate C, is enabled to depress the tilter; but on the other hand, a gold coin of too light weight, or a false coin of another metal with less specific gravity, would pass over the tilter without operating the same.

Any other false coin- for instance, one of an alloy of lead- having the correct weight would of necessity be of greater size than the opening A, and be thus detected even before being passed into the apparatus.

The required movement of the tilter is adjusted between set-screws d, that bear on the main lever of the same. The coin passes over the tilting plate C, between the guide-arms D, which are curved outwardly at the ends to a vane or wing-plate, E, that swings on a vertical pivot-rod on top and bottom bearings e, adjustable by screws. The vertical pivot-rod of the vane E is provided with a crank-pin, f, that is connected by a lever-rod f', with an upright arm, g, that is fastened to the cross-lever or axis a, of the tilter, so as to produce the swinging of the vane when the plate C is depressed by the passage of a full-weighted coin. A light or false coin will not operate the tilter and vane, and therefore leaves the vane in the position shown in full lines in Fig. 1. A full-weighted coin depresses the tilter and swings the vane into the position shown in dotted lines in Fig. 1, passing along the van, and dropping directly into the cash box or receptacle F. A light or false coin does not move the vane from its normal position, and is therefore conducted along the same, over an inclined spout, F, to a suitable receptacle for false coins, which receptacle is preferably open, so as to indicate instantly the presence of a defective coin, and admit to its being taken out and handed back to the party that presented it for payment.

PATENT NO. 183,833 - continued

Having thus described my invention, I claim as new and desire to secure by Letter Patent-

1. An apparatus for separating and detecting light and false gold coins, consisting, mainly, of conducting-channels, a tilting mechanism, and a swinging vane or wing operated thereby, and exit spouts, substantially in the manner and for the purpose set forth.
2. The combination, with the drop-opening A and the guide-channels B, D, of an adjustable balance or tilter that is only depressed by a coin of full weight, substantially as described.
3. The combination, with a tilting balance, of a swinging vane that is operated by the depression of the tilter by the gold coin, substantially as set forth.
4. The combination of the fulcrum-lever a, of the tilter arm g, lever-rod f', crank-pin f, and vertically-pivoted vane E, substantially as described.
5. The guide-arms D, having curved outer ends, in combination with the vane E, swinging against either end, to conduct the coin without obstruction to the proper receptacle, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARON BERNSTEIN.

Witnesses:

BERTHOLD ROI,
EDWARD P. MacLEAN.

AUTHORS' COMMENT

There is no mention of a model on the patent documents. The authors have never seen this particular coin counter and are unaware of its existence in the collection of any antique scale collector.

T. J. TOWSEY.
DEVICE FOR DETECTING COUNTERFEIT COIN.
No. 187,938. Patented Feb. 27, 1877.

Fig. 1.

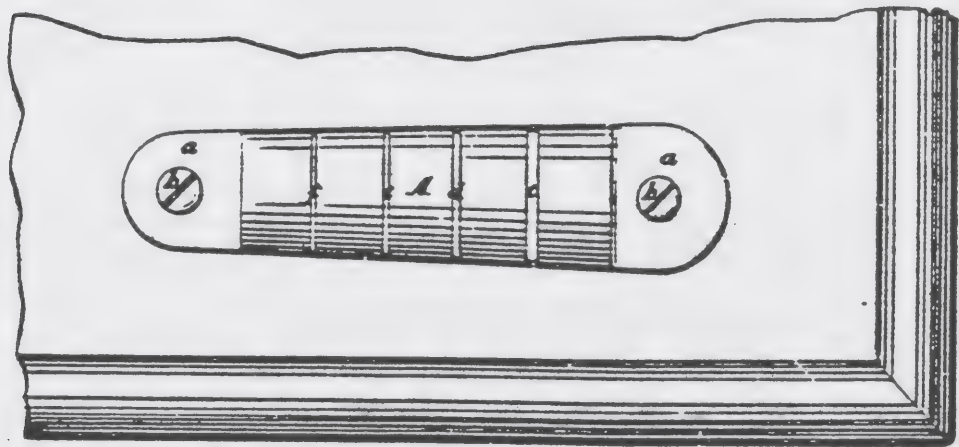
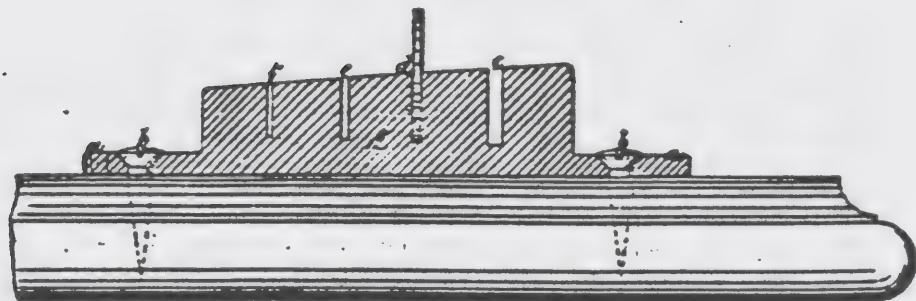


Fig. 2.



Witnesses:

Otto Hupeland
Edw. E. Miller

Inventor.

Thomas J. Towsey
New York & Co.

his attorney.

UNITED STATES PATENT OFFICE

THOMAS J. TOWSEY, OF NEW YORK, N. Y.

IMPROVEMENT IN DEVICES FOR DETECTING COUNTERFEIT COIN.

Specification forming part of Letters Patent No. 187,938,
dated February 27, 1877; application filed December 12, 1876.

To all whom it may concern:

Be it known that I, THOMAS J. TOWSEY, of the city, county, and State of New York, have invented a new and Improved Device for Testing the Breaking Resistance of coins, which invention is fully set forth in the following specification, reference being had to the accompanying drawing, in which-

Figure 1 represents a plan view. Fig. 2 is a longitudinal vertical section.

Similar letters indicate corresponding parts.

My invention has for its object to test the breaking resistance of coins, and to detect the spurious nature of such coins which are made of base metals, but equal in weight and in other qualities to genuine coins.

My invention consists of a receiver, composed of a body having at each end a flange perforated for the passage of screws, to fasten to a counter or table, and constructed with a series of vertical slots of different width, into either of which a coin of corresponding size to the slot can be placed, for testing the same, as hereinafter more fully described.

In the drawing, the letter A designates a receiver, which is made of cast-iron or other suitable material, and provided with flanges a, perforated with holes for the reception of screws b, by mean of which the same can be readily and firmly secured on a table or counter. In the receiver A, are a series of recesses c, d, e, f, of gradually diminishing width and depth, the first recess being intended for testing silver dollars, the second for silver half-dollars, the next for silver quarters, &c. The recess c, therefore, is made a little wider than the thickness of a silver dollars, and its depth is about equal to the radius of such a dollar piece, while the width of the recess d, is a little larger than the thickness of a fifty-cent silver piece, and its depth is about equal to the radius of such a piece and so on. In the example shown in the drawing all the recesses c, d, e, f, are in one and the same receiver, but, if desired, a separate casting may be provided for each recess.

The coin to be tested is dropped into the corresponding recesses, as shown in Fig. 2, and by pressing against its projecting edge with the thumb, its breaking resistance is ascertained. By these means the spurious

PATENT NO. 187,938 - continued

nature of such coins can be ascertained which made of base metal, and which have the same weight and ring as the genuine coin, but not the same breaking resistance.

What I claim as new, and desire to secure by Letters Patent, is-

The receiver A, formed at each end with a perforated flange, a, for the passage of screws to secure it to a counter or table, and provided in its body with a series of vertical recesses, c, d, e, f, of different width and depth, substantially as and for the purposes herein described.

In testimony that I claim the following I have hereonto set my hand and seal this 6th day of November, 1876.

THOS. J. TOWSEY. [L.S.]

Witnesses:

ROBT. E. MILLEE.

E. F. KASTENHUBER.

AUTHORS' COMMENT

This particular device is in reality neither a coin scale nor a counterfeit coin detector in the strict sense of the word. It depends upon the strength of the metal, in this case, silver coins, to withstand the pressure of trying to be broken and therefore assuming that these coins are then genuine. Such would be the case if all counterfeit coins were made of lead, but if a combination of lead, copper and tin were used, the breaking force applied by ones thumb would not break the coin, yet the coin would be a counterfeit. Of course, its color might give it away, but with a silver wash, such may not always be the case.

Great Britain had a similar device as pictured below. The device, made of what appears to be, hardened steel, has slots for four coins; namely, six pence, shilling, Florin and half Crown. It is 2 1/2 inches long and 3/8 inches wide and is secured to an oak base with a screw at either end. The wooden base is 4 3/4 by 1 1/2 inches and is provided with four screw holes at the ends for mounting on a counter or similar surface. A label on the device reads *THE 'REALM' COUNTERFEIT COIN DETECTOR THE SPECIALTY MFNG. CO, MANCHESTER* in two lines.

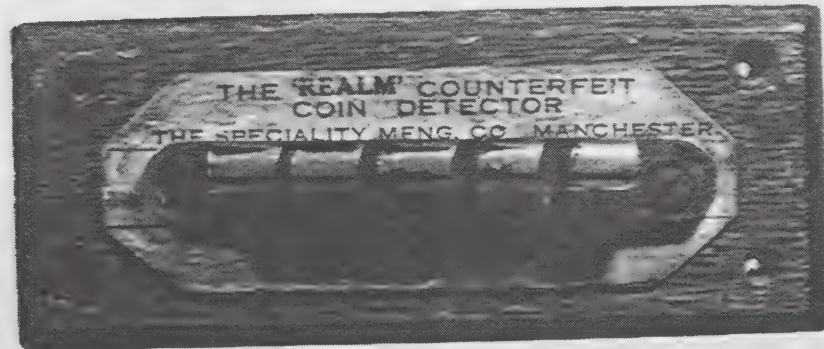
There is also a very similar English device in brass for five silver coins. It is unmarked as to the maker.

The authors at this writing have not been able to ascertain whether or not a design patent was issued for these English devices.

PATENT NO. 187,938 - continued

ENGLISH DEVICE

(Note complete similarity to TOWSEY patent)



PATENT NO. 187,938
[CHP. II : SEC. 2E]
[II-2E-8]

G. M. HOPKINS.

COIN TESTER.

No. 188,637.

Patented March 20, 1877.

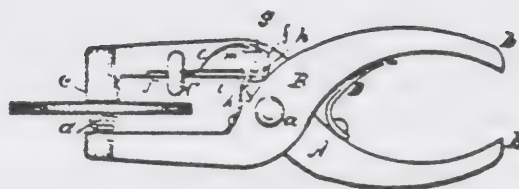


Fig 1.

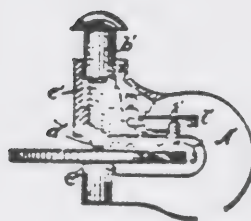


Fig 2.

WITNESSES:

G. M. Hopkins.
C. L. Telford

INVENTOR:

G. M. Hopkins.

[11-2E-9]

UNITED STATES PATENT OFFICE

GEORGE M. HOPKINS, OF BROOKLYN, NEW YORK, ASSIGNOR
TO HIMSELF AND CYRUS L. TOPLIFF, OF SAME PLACE.

IMPROVEMENT IN COIN-TESTERS.

Specification forming part of Letters Patent No. 188,637,
dated March 20, 1877; application filed February 12, 1877.

To all whom it may concern;

Be it known that I, GEORGE M. HOPKINS, of Brooklyn, in the county of Kings and State of New York, have invented an Improved Coin-Tester, of which the following is a specification:

My invention consists in the combination of a clamp for holding coin and a spring-actuated hammer for striking same, the object being to provide a simple, compacted, and yet effective instrument for testing coins by ringing them by means of a hammer while they are held by a clamp.

In the drawing, Figure 1 is a side elevation of an instrument employing levers to clamp the coin. Fig. 2 is a side elevation of an instrument in which the coin is clamped to a follower.

A, B are crossed levers, pivoted together at a, having the arms b formed into handles, which are thrown apart by the spring D. Upon the end of the lever A, opposite its handle a boss, c, is formed, and to the end of the lever B, opposite its handle, a spiral spring, d, is attached. C is a hammer fixed to a spring-arm, e, that is attached to a disk, f, which is pivoted at g to lever, A. A pin, h, projects from the back of the disk, f, and is pressed by a spring, i, that is secured in a recess in the lever A, by a screw, j. A spring, k, that projects from the lever B, engages a notch cut in the disk f when the handles are forced together, and raises the hammer.

The shoulder l of the disk f throws the spring k, out of the notch in the disk when the hammer is raised, and the spring i, acting on the pin h, causes the hammer to descend. The spring-arm of the hammer strikes the pin m, that projects from the lever A, as the hammer descends, causing it to rebound after striking the coin.

The coin to be tested is clamped between the boss c, of the lever A and the spring d, attached to the lever B, by closing the handles together.

This operation not only clamps the coin, but also partly raises the hammer. The pressure on the handles is increased until the hammer is raised through its full stroke and tripped.

PATENT NO. 188,637
[CHP. II : SEC. 2E]

[II-2E-9A]

PATENT NO. 188,637 - continued

The sound emitted by the coin as it is struck by the hammer indicates its quality.

In Fig. 2 an instrument is shown differing in form from that above described, but acting on the same general principle.

A' is a yoke or U-shaped frame, which is bored to receive the follower b', and is provided with a boss c', upon which the coin rests. To the inner end of the follower b', a short spiral spring d', is attached, between which and the boss c', the coin is clamped. A spring, e', is placed in the larger part of the bore of the frame A', and passes the shoulder of the follower b'. f' is a hammer, fixed to the spring-arm, g', that is attached to a disk, h', which is pivoted at i' to the frame A'. A notch, j', is formed in the disk h', which received the spring, k', that is attached at l', to the frame A'. A spring, m', is attached to the follower b', and engages a notch, n', in the disk h'. As the follower is pressed downward the disk is turned, and the hammer raised until the shoulder o' trips the spring m', permitting the hammer to fall and strike the coin, as in the other case.

Having thus described my invention, I claim as new and desire to secure by Letters Patent-

1. The combination of a clamp for holding coin and a spring-actuated hammer for striking the same, substantially as herein shown and described.
2. The combination of the levers A B, spring d, hammer C, and springs k i, substantially as herein shown and described.
3. The combination of the U-shaped frame A', spring-follower b', hammer f', and springs k' m', substantially as shown and described.

GEORGE M. HOPKINS.

Witnesses:

H. M. HOPKINS,
C. L. TOPLIFF.

CHEMISTRY, ELECTRICAL CROSS REFERENCE
AND WAVE ENERGY.

A. J. BAKER & J. W. SIMONTON.
Device for Detecting Counterfeit Coin.

No. 202,691.

Patented April 23, 1878.

Fig. 1.

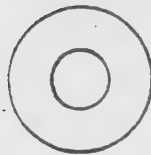
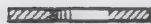


Fig. 2.



Witnesses:

John O. Donoghue

E. H. Bradford

Inventors:

Aaron J. Baker

John W. Simonton

By H. J. Ennis

Attorney

[11-2E-11]

UNITED STATES PATENT OFFICE

AARON J. BAKER, OF EDINBURG, AND JOHN W. SIMONTON, OF
TAYLORSVILLE, INDIANA

IMPROVEMENT IN DEVICES FOR DETECTING COUNTERFEIT COIN.

Specification forming part of Letters Patent No. 202, 691,
dated April 23, 1878; application filed January 7, 1878.

To all whom it may concern:

Be it known that we, AARON J. BAKER, of Edinburg, in the county of John son, and JOHN W. SIMONTON of Taylorsville, in the county of Bartholomew, all in the State of Indiana, have invented certain new and useful improvements in Detecting Counterfeit or Spurious Coin and Metals; and we do hereby declare that the following is a full, clear, and exact description of our invention which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon which form a part of this specification.

Figure 1 is a plan, and Fig. 2 a sectional view, of the invention.

This invention relates to improvements in devices for detecting spurious gold and silver coins, and in the improved construction of the same, and manner of applying the test, hereinafter more fully described, and particularly pointed out in the claim.

The invention consists of a circular or other suitably-shaped piece of zinc, provided with an opening in the center, the manner of operating the same being to place the test upon the coin to be tested and applying the tongue to the coin through the opening in the center of the piece of zinc, and if the coin is pure, or nearly so, a very perceptible electric shock, accompanied by a decided metallic taste, will be experienced, which shock and taste diminish in intensity in proportion as the coin is alloyed with baser metals, it being a well known fact that to produce galvanic action it is only necessary to form what is called a "galvanic circle"- that is, a certain order of substances capable of exciting electricity.

The electrical effects of a simple galvanic circle are in general too feeble to be perceived, except by very delicate tests. However, the tongue and other sensitive parts of the body, being very easily affected, afford a simple and convenient mode of putting the process in operation.

The most convenient shape for a coin-tester of this description is a disk having a central opening, the circular form having no projections to wear holes in the purse or pocket, and the central opening presenting the largest amount of surface in the most convenient manner for the purpose specified.

PATENT NO. 202,691
[CHP. II : SEC. 2E]

[II-2E-11A]

PATENT NO. 202,691 - continued

In this test, although the quantity of electricity set in motion is very small, it is quite sufficient to produce very considerable effects; hence the great desirability and convenience of the above manner of testing coins, involving no complicated balances or delicate instruments of any kind, it being easily operated by a child, or even those people deprived of sight, who could not use any of the tests ordinarily applied in such cases.

Having thus described our invention and the process involved of testing coins, what we claim as new and useful, and desire to secure by Letters Patent, is-

A coin-tester consisting of a disk of zinc having an opening in the center, substantially as and for the purpose specified.

In testimony that we claim the foregoing as our own we hereby affix our signatures in presence of two witnesses.

AARON J. BAKER,
JOHN W. SIMONTON.

Witnesses:

ROBERT W. MEDKIRK,
PETER A. CANARY.

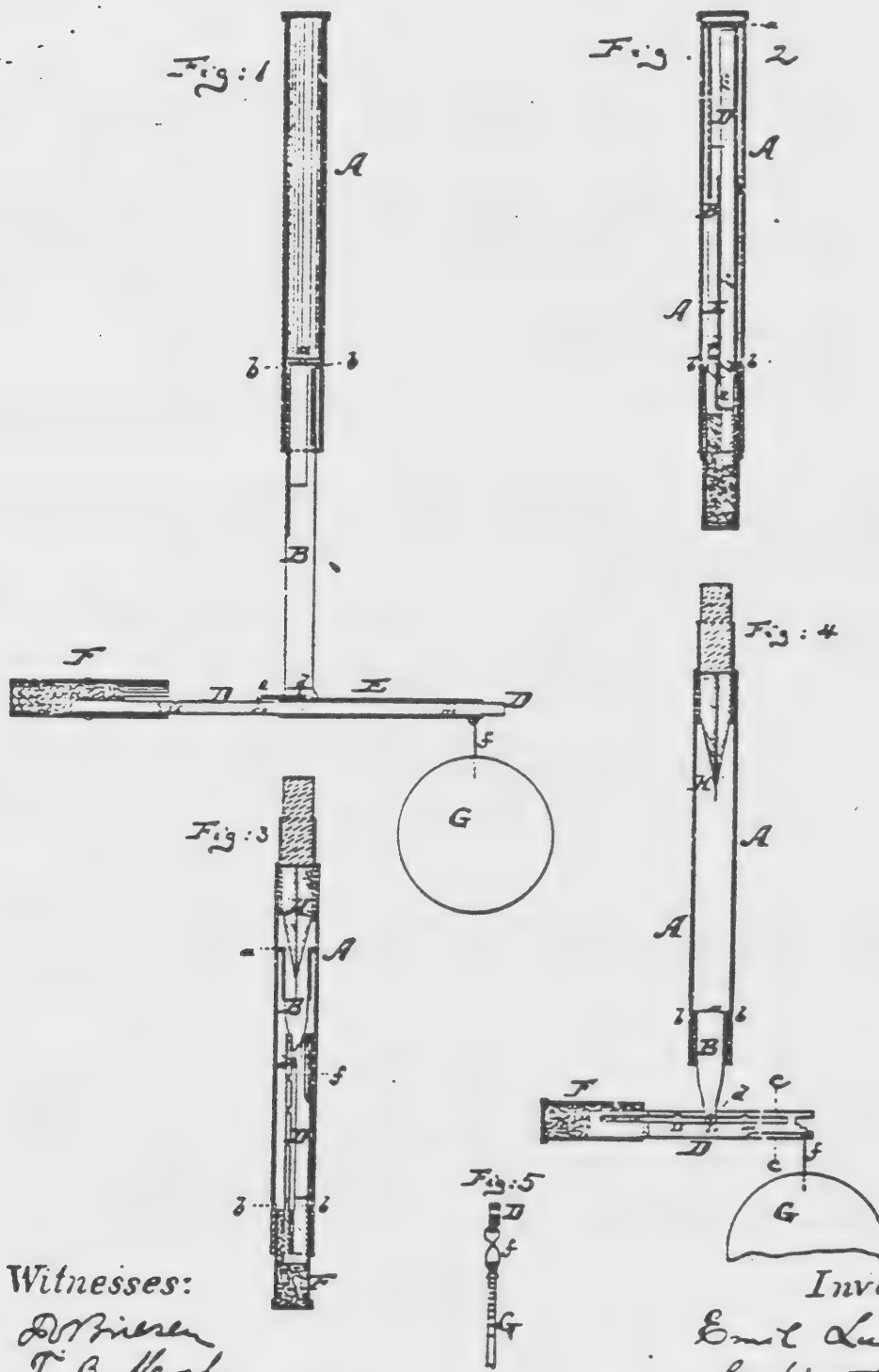
AUTHORS' COMMENT

Unless this detector is discovered with information thereon indicating either its name, maker or patent date, then any small flat piece of circular zinc with a hole in it *MIGHT* be considered as the patented item.

E. LUEDERS.
Coin-Tester.

No. 205,492.

Patented July 2, 1878.



Witnesses:
D. B. Krosch
T. B. Krosch

Inventor:
Emil Lueders
by his attorney
A. B. Krosch

UNITED STATES PATENT OFFICE

EMIL LUEDERS, OF WEST HOBOKEN, NEW JERSEY

IMPROVEMENT IN COIN-TESTERS.

Specification forming part of Letters Patent No. 205,492,
dated July 2, 1878; application filed April 10, 1878.

To all whom it may concern:

Be it known that I, EMIL LUEDERS, of West Hoboken, in, the county of Hudson and State of New Jersey, have invented an Improved Specie-Scale, of which the following is a specification:

Figure 1 is a vertical central section of my improved specie-scale, showing it extended for use. Fig. 2 is a vertical central section of the same, showing it contracted and folded together, Fig. 3 is a vertical central section of a modification thereof, showing it extended in condition of use. Fig. 5 is a detailed cross-section on the line c c, Fig. 4, showing the clasp for holding the coin.

Similar letters of reference indicate corresponding parts in all the figures.

This invention has for its object to produce in the most convenient form a pocket-scale for weighing coins, and for distinguishing the genuine from the counterfeited coins.

The entire instrument can be folded or pushed into a shell, the same as a pocket-pencil, and can be carried in the pocket without inconvenience, and is yet always ready for use when desired.

This invention consists principally in combining, with the enclosed case or shell, having inwardly-projecting stops or pins, a slide having a head, and a scale-beam pivoted to said slide, so that it can be swung at right angles thereto.

The invention also consists in providing said beam at one end with a weight, and at the other end with a clasp for holding the coin to be weighed, and in other details of improvement, hereinafter more fully specified.

I will first describe the instrument as shown in Figs. 1 and 2. In these figures the letter A represents a shell made of sheet metal, hard rubber, or other suitable material, of cylindrical or other proper form, within which shell is contained a slide or piston, B, which can be pushed entirely into the shell, as shown in Fig. 2, or partly withdrawn therefrom, as shown in Fig. 1, its head a, being, in the last mentioned position, supported on inwardly-projecting pins or stops b that are formed within the shell A, as

PATENT NO. 205,492
[CHP. II. : SEC. 2E]

[II-2E-13A]

shown.

The lower end of the slide B is forked, and adapted to receive the pivot d of the scale-beam D. In the construction shown in Fig. 1, the scale-beam D proper slides within a sleeve, E, which sleeve is, by the pin d, pivoted to the slide B. The sleeve E carries, in this instance, a projecting spring-catch, e, which engages into notches formed on the edge of the beam D, to regulate the several positions of the latter. One end of the beam D carries a weight, F. The opposite end of the sleeve E carries a wire clasp, f, of the kind clearly shown in Fig. 5, for holding the coin G to be weighed.

The beam D in Fig. 1 is shown to be provided with four notches. That nearest the weight F is for defining its position in weighing quarter-dollar; that next thereto, and in which the spring c is shown to engage in Fig. 1, defines the position of the scale-beam in weighing half-dollars. The third notch is intended to weigh the so-called silver "legal-tender" dollars; and the next thereto, the trade-dollars; but other notches may be supplied for weighing other kinds of coin, even gold coin, if desired.

When the instrument is not required for use, the sleeve E and the Beam D are folded into the forked slide B and pushed into the shell A, as in Fig. 2, in which case the cylindrical weight F will close the formerly open end of the shell, as also shown in Fig. 2.

The modification shown in Fig. 3 and 4 differs from the apparatus shown in Figs. 1 and 2 substantially only in that the sleeve E is dispensed with, the beam D being slotted instead, and the slot supplied with a series of notches, as clearly shown in Fig. 4, so that the beam may be directly adjusted on the pivot d in lieu of adjusting it within the sleeve E.

In this case the clasp f is directly attached to the non-weighted end of the beam D, as shown in Fig. 4. The construction shown in Figs. 3 and 4 is less expensive than the other, and more convenient in admitting of a shorter slide, B; but in other respects the operation is exactly the same.

The shell A may, if desired, be used for holding a pencil, H, as in Fig. 3 and 4, or a pen or other convenient device.

I do not claim to have invented a pocket-scale consisting of a shell, slide, and weighted scale-beam pivoted to said slide, and carrying a clasp for suspending the coin, all arranged so that the scale-beam is at right angles to the slide when the scale is used; but-

I do claim-

1. The shell A, made with inwardly-projecting stops or pins b, and combined with the slide B, having head a, and with the scale-beam D, pivoted to said slide so that it can be swung at right angles thereto outside of the shell, substantially as herein shown and described.

PATENT NO. 205,492 - continued

2. The combination of the pivoted sleeve E with the notched beam D, carrying weight F, and with the spring-catch e, for operations substantially as specified.

EMIL LEUDERS.

Witnesses:

T. B. MOSHER,
J. TURK.

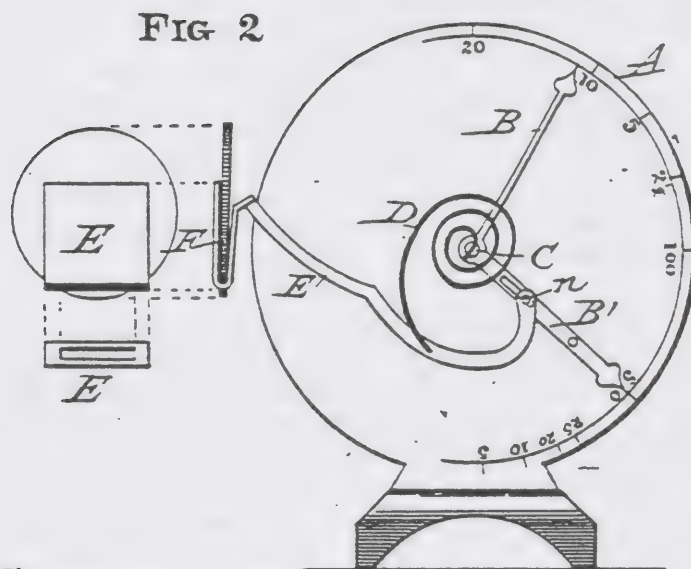
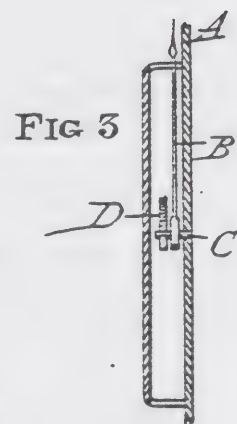
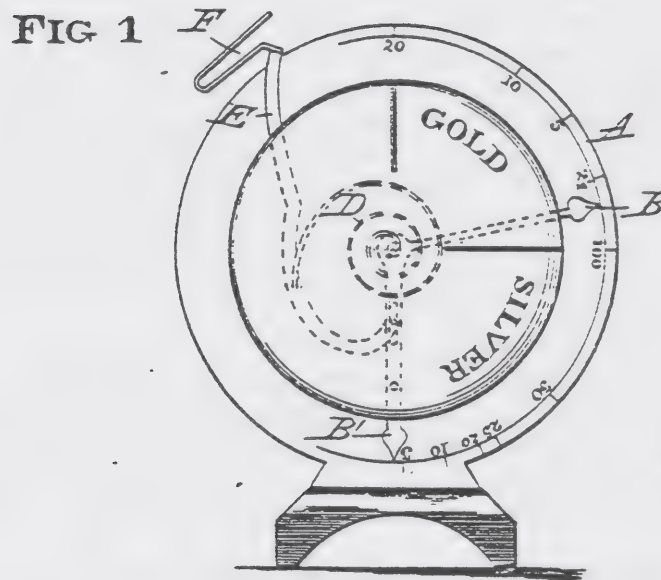
(No Model.)

G. SMITH & J. J. WELLS.

COIN TESTER AND INDICATOR.

No. 259,338.

Patented June 13, 1882.



Witnesses
Wilbur Bradford
Charles E. Cheney

Inventors
G. Smith and
John J. Wells.
By C. W. M. Smith.
Attorney.

[II-2E-16]

A. PETER, Philadelphia, Pa. U.S.A.

UNITED STATES PATENT OFFICE

GILBERT SMITH AND JOHN J. WELLS,
OF SAN FRANCISCO, CALIFORNIA

COIN TESTER AND INDICATOR

SPECIFICATION forming part of Letters Patent No. 259,338,
dated June 13, 1882. Application filed November 14, 1881. (No Model)

To all whom it may concern;

Be it known that we, GILBERT SMITH and JOHN J. WELLS, citizens of the United States, and residing at San Francisco, in the county of San Francisco and State of California, have invented a new and useful Coin Tester and Indicator, of which the following is a specification.

The object of our invention is to provide a means whereby spurious coins and coins of short weight can be easily and quickly detected.

We accomplish this object by the device illustrated in the accompanying drawings, in which-

Figure 1 is a front elevation of the dial with cap for covering the mechanism in position. Fig. 2 is also a front elevation of the dial and the stand with cap removed. Fig. 3 is a vertical section in elevation.

Similar letter refer to similar parts throughout the several views.

Our indicating-dial A is mounted upon a stand, as shown, and provided with a scale for testing gold coins of the denomination of two dollars and a half (\$2 1/2), five dollars, (\$5), ten dollars, (\$10), and twenty dollars (\$20) and the word "gold" is marked beneath these figures, which figures and scale occupy about one quarter of the face of the dial. Beneath this gold-scale, above described, we place the scale for silver coins, which consists of the numerals five, (5), ten, (10), twenty, (20), twenty-five (25) fifty, (50), and one hundred, (100), the latter representing one dollars, or one hundred cents, and the former figures from five cents to fifty cents. This scale is designated by the word "silver".

The hands or pointers B B' operate on a pin, C, upon the face of the dial, the outer end of which is split to receive a spring, D, which later connects with the arm of the coin-holder E. To the lower end of the arm of the coin-holder is connected to a bent pin, n, which operates in a slot made in the pointer or hand B', so as to give play to the coin-holder and take away that rigidity of the parts which a close connection would have or if the arm were permanently fixed to the hand. The upper end of the coin-holder is a flattened piece of metal, and is bent over upon itself to form a slot, F, to receive the edge of a coin and retain it in position while being tested.

PATENT NO. 259,338
[CHP. II : SEC. 2E]

[II-2E-16A]

PATENT NO. 259,338 - continued

In practice we make the spring of such tension, and adjust the indicators or hands with reference thereto, that when a genuine piece of coin is put into the receiver or coin-holder the denomination will be registered or indicated by one of the pointers or hands upon the dial, either in gold or silver, as the case may be. For instance, if the coin be a five cent piece the silver indicating hand will point to and be in the exact line with the figure 5 on the dial, and so on from the smallest denomination to the largest, on both the gold and silver scales. Should the coin, however, be counterfeit, or the weight thereof be short by reason of its having been tampered with, the hands will fall short of the figures or marks of the scale which the coin represents, and thus show to a certainty that the coin should be rejected.

It will thus be clearly seen that in the use of our device persons who are unskilled in the weight and value of coins will be put on guard against that deception which is now so largely practiced in money exchanges.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is-

1. The dial A, provided with gold and silver numerals and scales, in combination with the hands, pointers, or indicators operated by a spring, so that when a weight or coin is placed upon the coin receiver or holder the hand will point to that number upon the dial that represents the value of the coin placed in the receiver or holder, substantially in the manner as herein set forth and specified.
2. In a coin tester and indicator, the combination of the dial A, with the hands or pointers B, spring D, and coin-holder E, constructed and operating substantially in the manner as herein set forth and specified.

In testimony that we claim the foregoing we have hereunto set our hands this 27th day of October, 1881.

GILBERT SMITH,
JOHN J. WELLS.

Witnesses:

C. W. M. Smith,
Wilmer Bradford

(No Model.)

W. W. HAAS.

COIN COUNTER AND TESTER.

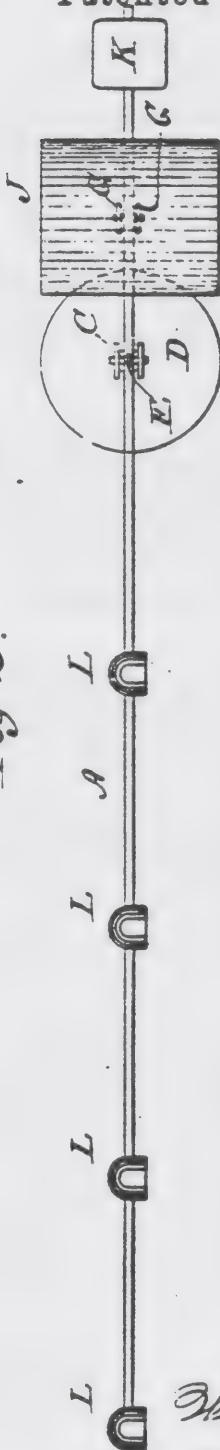
No. 314,330.

Patented Mar. 24, 1885.

Fig 1.



Fig 2.



WITNESSES:

L. C. C.
Chas. L. L. C.

INVENTOR:

William W. Haas

BY

M. W. L.

ATTORNEYS.

UNITED STATES PATENT OFFICE

WILLIAM W. HAAS, OF FARMER CITY, ILLINOIS.

COIN COUNTER AND TESTER

SPECIFICATION forming part of Letters Patent No. 314,330,
dated March 24, 1885

Application Filed September 10, 1884. (No Model)

To all whom it may concern:

Be it known that I, WILLIAM W. HAAS, of Farmer City, in the County of De-
witt and State of Illinois, have invented a new and Improved Coin- Counter.
of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved coin-balance
for facilitating the counting of coins of all kinds.

The invention consists in the construction and arrangement of parts, as
will be hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of
this specification, in which similar letters of reference indicate corre-
sponding parts of both figures.

Figure 1 is a longitudinal elevation of my improved coin-counter. Fig. 2
is a plan view of the same.

A long beam, A, provided near one end with knife-edge pivots B, rests up-
-on a standard, C, having a suitable base, D. The beam has an upwardly- pro-
jecting tongue, E, at the pivots. The short end of the beam, which is con-
siderably shorter than the long end, is provided with two laterally- pro-
jecting pivots, F, ay about half the length of the short arm from the stan-
dard C, and on the pivots an upright bar, G, is pivoted, having its lower
end connected by a link H, with the standard. On the upper end of the bar G
a receptacle, J, is placed and properly secured.

A balance-weight, K, is heid on the short end of the beam, so as to bal-
ance the long end.

On the long end of the beam A four cups, L, are secured, which taper to-
ward the lower ends, and are each provided with a series of offsets. At the
top the cups are large enough to receive a twenty-dollar gold piece or a
silver dollar, and at the bottom they are adapted to receive a ten-cent
piece. The cups are open at one side, so that the coins may be grasped by
the thumb and forefinger, or may be pushed out through the open side by a
finger of the operator. This improvement allows of the ready removal of the
coin, as it is not necessary to first raise the coins by means of a finger-

PATENT NO. 314,330
[CHP. II : SEC. 2E]

[II-2E-18A]

nail or a pointed instrument in order to grasp it with the forefinger and thumb, as in some prior constructions. The first cup L is such a distance from the fulcrum that it will raise five times its own weight on the receptacle J, the second that it will raise ten, the third twenty, and the fourth forty times its own weight on the receptacle J.

The operation is as follows: If a number of quarters are placed on the receptacle J, and it requires two quarters in the fourth cup from the fulcrum, one in the third, and one in the second cup, the number of coins on the receptacle J will be equal to $40 \times 2 + 1 \times 20 + 1 \times 10 = 110$ quarters, equal to \$27.50. Dollars, eagles, double eagle, &c., are all counted in the same manner.

The unit of weight is the weight of one of the coins to be weighed.

It is not absolutely necessary that the coins should be used as weights, as weights can be substituted if they are equal in weight to the proper weight of the different kinds of coins.

Having thus described by invention, what I claim as new, and desire to secure by Letters Patent, is-

1. A coin-counter consisting, essentially, in the standard C, the beam A, pivoted thereto to form a long and short arm, graduated open-sided cups L on the upper edge of the long arm, the weight K on the short arm, the bar G, pivoted to the short arm of the beam between the weight and the standard, the link H, pivoted to the lower end of the bar G and to the standard, and the receptacle J on the upper end of the bar G, substantially as set forth.
2. In a coin-counter, a coin-cup, L, tapered from the top to the bottom, provided with offsets and open at one side, substantially as herein shown and described.

WILLIAM W. HAAS

Witnesses.

GEO. COLLINS,
J. W. MORELAND.

(No Model.)

R. W. RIESS.

COMBINED PENCIL HOLDER, ERASER HOLDER, AND COIN TESTER.

No. 549,534.

Patented Nov. 12, 1895.

Fig: 1

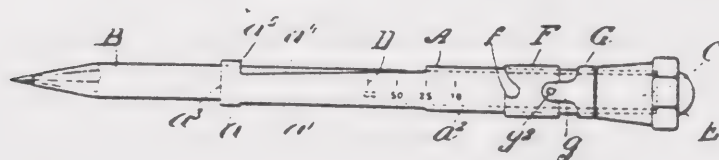


Fig: 2

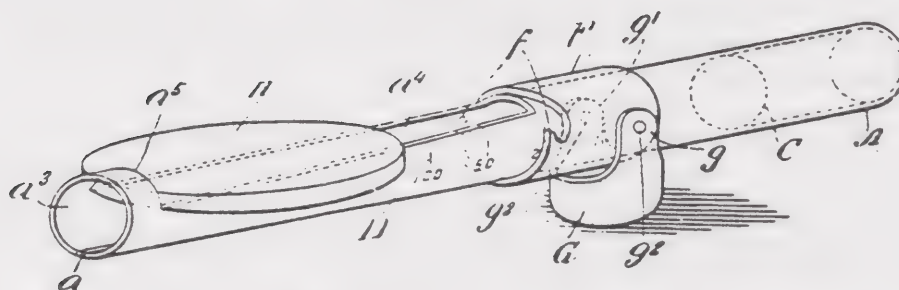


Fig: 3

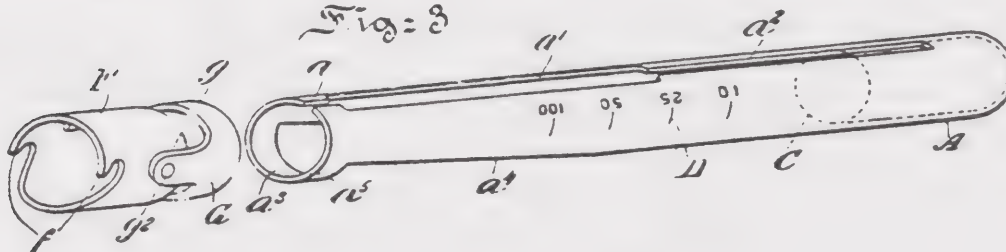
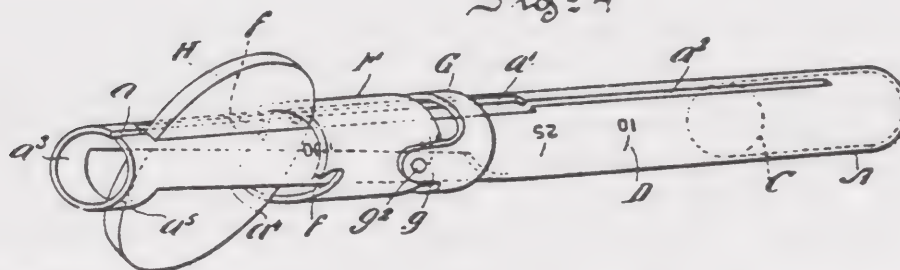


Fig: 4



Witnesses:
Richard E. Mansell.
Lucas H. H. H. H.

Inventor.
Rudolph W. Riess,
By J. Walter Douglas
attorney.

UNITED STATES PATENT OFFICE

RUDOLPH WM. RIESS, OF PHILADELPHIA, PENNSYLVANIA.

COMBINED PENCIL-HOLDER, ERASER-HOLDER,
AND COIN-TESTER

SPECIFICATION forming part of Letters Patent No. 549,534,
dated November 19, 1895. Application filed April 3, 1895.
Serial No. 544,238. (No model)

To all whom it concern:

Be it known that I, RUDOLPH WM. RIESS, a citizen of the United States, residing at Philadelphia, (Germantown,) in the county of Philadelphia and State of Pennsylvania have invented certain new and useful Improvements in a Combination Holder for a Writing Implement and an Eraser and Counterfeit Coin Detector, of which the following is a specification.

My invention has relation to a pocket device comprising a holder for a writing implement, such as a pen or pencil, an eraser, and a counterfeit coin detector, having adjustable means for establishing a scale for weighing, so as to determine the genuineness or spurious character of coin of different denominations, and in such connection it relates more particularly to the general construction and arrangement of the parts of the device for said purposes.

The principal object of my invention is to provide a simple, durable, and efficient pocket device for holding a writing implement and an eraser, and also adapted to be readily adjusted, so as to form a scale for readily weighing coin of different denominations as well as determining the genuineness or spurious character thereof.

My invention, stated in general terms, consists of a combined holder for a writing implement and an eraser and a coin weighing and counterfeit detector constructed, arranged, and adapted for use in substantially the manner herein after described and claimed.

The nature and general features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which-

Figure 1 is a side elevation of the holder with a writing implement, mounted in one end, an eraser secured to the other end, and a notched sleeve with its pivotal trunnion mounted on the holder, but adapted to be so manipulated as to become a standard for the graduated scale or beam for the reception of coin of different denominations by shifting the trunnion and therewith the notched sleeve on said holder. Fig. 2 is a perspective view of the oblong slotted hollow holder for the writing implement as well as the eraser, both removed therefrom and with the slideable sleeve of the

PATENT NO. 549,534
[CHP. II : SEC. 2E]

[II-2E-20A]

beam-scale, with a coin applied to the slotted portion for weighing the same, the shifting of the position of the standard and notched ended sleeve on the graduated holder adapted to accommodate coins of different weights and to overcome the counterweighted end of the holder, so as to accurately determine the genuineness or spuriousness character of the coin. Fig. 3 is a similar view of the under side of the holder, with the sleeve and its pivotal trunnion or standard removed from the holder; and Fig. 4 is a similar view of the under side of the holder, showing the guideway for the introduction of coin of different denominations for determining the genuineness or the spuriousness character thereof and which guideway as to the reception of coins of different denominations is controlled by said sleeve slideable on the holder, according to the graduations thereof, to permit of the coins passing therethrough.

Referring to the drawings, A is a metal or other tube or cylinder having the narrow oblong slot a on the under side merging into an oblong guide a' and terminating in a narrow slit a². The guideway a' is provided for the purpose of inserting coin of different denominations, and the length of the slot is controlled by a slideable sleeve with a pointer directed to a scale on the holder, which governs the size of the slot by the movement thereof to permit of the insertion of the different coins, and thereby to readily determine whether the coin is genuine or spurious, the latter type of coin being generally more bulky or thicker than a genuine coin. Moreover this guideway merges into the slits a and a², to afford the means of required expansion of the holder to permit of the insertion of a pencil or pen B into the forward end, a³, of the holder, as clearly illustrated in Fig. 1 of the drawings.

In the upper surface of the holder A is provided an enlarged slot a⁴, as clearly illustrated in Figs. 1 and 2, with walls tapering to the front end and terminating in an arched projection a⁵, and, as viewed transversely of the holder, forming a rest thereat for coin of different denominations applied to the walls of the tube or cylinder for effecting the weight thereof, and thereby to determine the genuineness or spuriousness thereof. to be presently more fully explained.

The rear portion of the holder A is internally weighted by the insertion of a solid metal plug C into the tube or cylinder. The side or surface of the tube or cylinder A is provided with a graduated scale D on each side or surface to denote one dollar, fifty, twenty-five, ten cents, &c., in silver, and on the other side for gold coin of different denominations.

E is an ink or pencil eraser, of suitable shape or form, detachably applied to the weighted end of the holder A, as clearly illustrated in Fig. 1 of the drawings, and at the other or slotted and slitted end of the holder is inserted the pencil or other writing implement B, as also clearly illustrated in Fig. 1.

F is a sleeve fitting the exterior surface of the holder A, and adapted to be slid thereon. This sleeve on each side is provided with a notch having a point f, and serving as a pointer for the graduated scale of the holder A. This sleeve is provided with a trunnion G, the arms g and g' of which, by means of rivets or pins g², are connected with said sleeve F and constitute the sliding standard G of the coin-weighing device. In an inoperative position the standard and its sleeve occupy the position illustrated in Fig. 1, while in operative position they respectively assume the position shown in Fig. 2, and the sleeve is adapted to be slid along the holder about the scale with the pointer f directed thereto and so that the holder may receive at the and so that the holder may receive at the forward tapering portion thereof the coin H, as illustrated in Fig. 2, overbalancing the rear weighted end of the holder by the coin depressing the same, so as to assume the position the position illustrated in Fig. 2, at an angle to a horizontal plane to denote the genuineness thereof; but if a counterfeit, the weighing device thus establishes by the holder with the sleeve and its pivotal trunnion properly positioned will not overbalance the weighted end of the holder, whereby at once the spuriousness of the coin can be readily detected. By shifting the sleeve on the holder according to the scale with the pointer f, of the sleeve in each instance directly opposite to the numeral of the graduated scale of the holder a coin corresponding to the numeral indicated on the scale can be quickly and reliably detected as to whether genuine or not.

It may be here remarked that spurious coins are usually of greater thickness than the genuine coin, in order to secure required weight, and these can be detected by introducing the same through the guideway a' of the slotted holder after having adjusted the sleeve of the holder according to the scale thereon to permit of a passage of the same through the said guideway.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is-

1. A combined bolder for a writing implement and eraser and weighing device, for coins, consisting of a tube or cylinder open at one end for the reception of the writing implement, weighted at the other end and having an eraser applied thereon and a sleeve with a pivotal standard for establishing a weighing device, for coin of different denominations, substantially as and for the purposes set forth.
2. A holder for a writing implement and weighing device, comprising a graduated scale tube or cylinder, provided with an oblong slot for inserting coin therethrough and with a tapering surface forming a rest for the coin and a slideable sleeve on said tube or cylinder and having a pivotal trunnion forming in operative position a vertical standard for the weighing device, substantially as and for the purposes set forth.

PATENT NO. 549,534 - continued

3. A holder for a writing implement and weighing device, comprising a slotted counterweighted and graduated scale tube or cylinder with a guideway, for inserting therethrough coin, oblong slits merging into said guideway, a removable sleeve mounted on said tube or cylinder and provided with a pivotal trunnion forming in operative position a standard for the weighing device, substantially as and for the purposes set forth.
4. A combined holder for a writing implement and weighing device, comprising a graduated or scaled cylinder open at one end and weighted at the other end and having an intermediate guide-way and a coin rest, a sleeve provided with a pointer and a movable trunnion connected with said cylinder and slideable thereon, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

RUDOLPH WM. RIESS.

Witnesses:

CHARLES H. WEISS,
WM. H. EMHARDT, Jr.

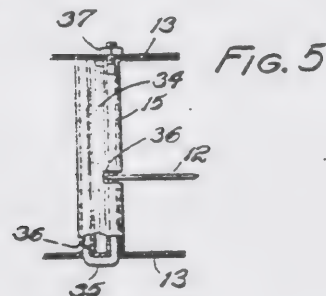
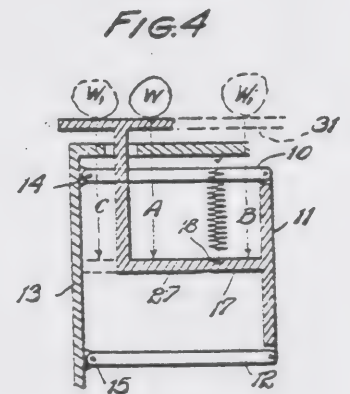
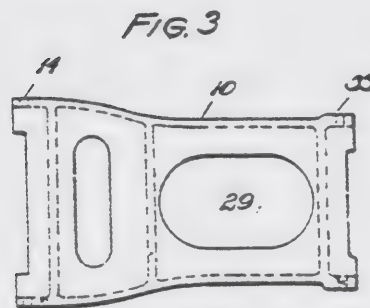
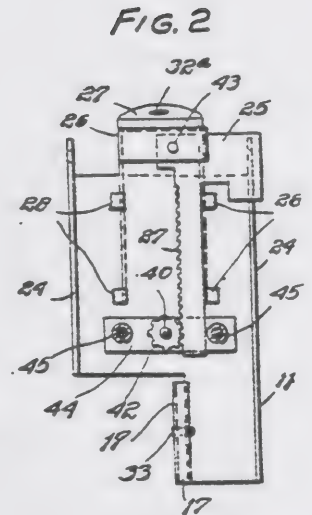
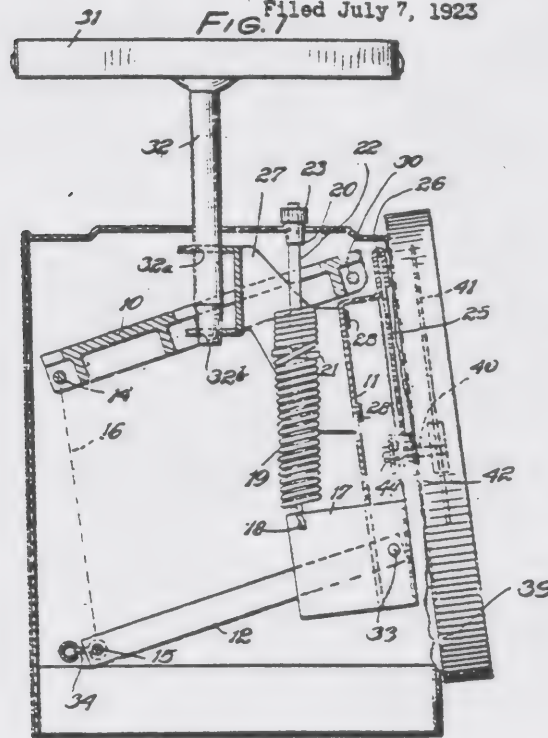
Aug. 28, 1928.

M. H. HANSEN

1,682,506

SCALE MECHANISM

Filed July 7, 1923



Inventor
Marius H. Hansen.
By *Clintell Parker Carlson*
Att'y

CHAPTER II
UNITED STATES PATENTS

SECTION 2F

MISCELLANEOUS PATENTS
(Continued)

UNITED STATES PATENT OFFICE

Patented Aug. 28, 1928

1,682,506

MARIUS H. HANSEN, OF CHICAGO, ILLINOIS,
ASSIGNOR TO HANSON BROTHERS SCALE COMPANY, OF
CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

SCALE MECHANISM

Application filed July 7, 1923. Serial No. 649,983

This invention relates generally to a scale mechanism and more particularly to the type having a tension spring therein. In scales of this type it is desirable to have a face inclined to the vertical and usually such an arrangement requires additional mechanism.

One object of my invention is to provide a substantial scale having an inclined face with a minimum of working elements.

Another object is to provide a mechanism designed to resist torsional effects from an unbalanced load.

Still another object is to connect to a single member of the mechanism all the moving parts.

Another feature of my invention is the provision of a registering needle having a straight rack and pinion engagement in substantially unchanging relation.

Another object is to provide a scale in which lost motion can be permitted without affecting the accuracy of the scale.

A further object of the invention is the provision of a construction which keeps the lost motion always in the same direction.

Scales of this type usually employ an arrangement of members in the form of a parallelogram. Various means have been utilized to effect a registration of the weight and to connect the scale pan and the spring to the mechanism. In my invention I have combined these parts in such a manner that they all operate from a single member of the parallelogram. This permits a

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[CHP. II : SEC. 2F]

[II-2F-1A]

design for the member specially adapted for economical manufacture from pressed sheet steel, the required form giving rigidity. In conjunction with this a rigid cast member in the parallelogram keeps the whole free from torsion and permits the third member to be a single strip free from torsional effect, the fourth member being fixed and a part of the casting, or frame.

Another feature is the angle of fixation for the parallelogram. Since an inclined face is desired, I have established the fixed member of the parallelogram parallel to the dial face. Thus the opposite member of the parallelogram is always parallel to the face. The angularity of the parallelogram at different loads merely changes the distance between the face and this member. By placing the straight rack on this parallel member and using a wide pinion on the registering needle, a simple and efficient connection is made for registration.

In the manufacture of scales of this type, economy, simplicity, accuracy, and utility are the leading features to be attained. In my invention I have provided a construction to satisfy all these requirements as will more fully appear hereinafter.

In the drawings, Fig. 1 is a general cross section view showing the scale mechanism. Fig. 2 is a view of the front member. Fig. 3 is a plan view of the top member. Fig. 4 represents a scale embodying my invention and is also a graphical representation of the forces existing in a mechanism under different conditions of use, imaginary extensions of the parts being shown for this purpose. Fig. 5 is a detail showing the manner of attaching the mechanism to the casing.

In expounding my invention I choose first to describe somewhat in detail the scale shown in Fig. 1 as this is typical of a commercially practical scale of the type to which my invention applies. The principles embraced by my invention are directed to making a more accurate device of parts which are mechanically simple and easily constructed.

The scale comprises generally the parallelogram arrangement of the top member 10, the scale comprises generally the parallelogram arrangement of the top member 10, the front member 11, the bottom member 12 and the casing 13. The members 10 and 12 are pivoted to the casing at 14 and 15, respectively, whereby the casing becomes the fixed member of the parallelogram, said member being hereinafter referred to as the fixed member 16 and represented by the dotted line designated 16. The casing 13 is economically made of sheet metal to lessen the weight of the whole and yet to furnish the required strength for the capacity of the scale without impairing its accuracy. However, my invention relates to a scale mechanism which may be supported by any fixed frame or member, instead of casing 13. In connection with this feature of accuracy there is an important relation of the scale mechanism as I have designed it to the casing or support to maintain accuracy.

The member 11 has the extension 17 thereon extending inwardly of the parallelogram. At the point 18 the spring 19 is attached extending upwardly where it is held by the casing 13 at 20. In attaching the spring at the upper end a disk 21 is adjustably held between adjacent coils in the spring and a link 22 centrally held by the disk has a thumb screw 23 engaging the casing 13. The disk 21 is capable of being screwed into the spring to vary the number of coils which are active in the scale, and the screw 23 is capable of adjustment to vary the tension of these coils.

The front member 11 is pressed from cold rolled steel having the general form of a channel iron with the sides 24, the top having the bent piece 26 in which is pivoted the rack member 25. To the rear of the front member, extending back and upwardly, is the bracket 27 of sheet material, fastened to the front member by the bent ears 28. The top member 10 is a cast piece having the form shown in Fig. 3 with the opening 29 through which the bracket member 227 passes upwardly. Members 10 and 11 are pivoted together at 30. The construction of each, by the width of the members, is a guard to resist torsion effects which tend to occur by placing the weight upon different parts of the scale pan 31 supported by the post 32 in tapered holes 32^a and 32^b in the bracket 27.

The bottom member 12 is a simple link connected to the front member at 33 and to the fixed member 16 at 15 as shown in Fig. 5. The pivot is a rod extending through the support which has two parallel circular channels therein, made by rolling the edges of a single strip of material. The rod 15 is U-shaped at one end 35 to form a locking leg 36, which holds the support 34 rigid to the frame. At the other end of 15 are threads and a nut 37 therefor which secure it to the casing. A slot 38 in the support 34 permits the engagement of member 12 by the pivot 15.

Having described the general character of the essential members, I now wish to show the relation of the same to the design, the accuracy and the general purposes of my invention. This is best done by reference to the diagram entitled Fig. 4 which represents a scale having the member 11 with a single extension 17-27 thereon, this being a combined representation of the members 11, 17, and 27-32-31 of Fig. 1. The whole functions as a rigid member in stable equilibrium, assumed as pivoted about the point 18 in the plane of the drawing. Any object W applied on the scale pan 31 is effective on the rigid member 11 upon a line through the center of gravity of the object W'.

In Fig. 4 the pan is shown as having an imaginary extension for the purpose of explanation only. In operation of the scale the forces acting on member 11 bring it to stable equilibrium. According to its position on the pan the force may be applied anywhere as A, B, or C. A and C are upon the same side of the point 18 while B is on the opposite side, the direction being taken substantially along the plane of the parallelogram. It is thus seen that weight at A or C tends to rotate the number 11 counter-clock

-wise, while the weight at B tends to rotate it clockwise. When the weight is at B, the member 10 is tension and 12 in compression. When the weight is at A or C the member 10 is compression and 12 is in tension. Consequently a shift of the weight on the scale pan such that the center of gravity changes from one to the other side of point 18 causes a shift of the forces in the parallelogram. For reasons of economy in manufacture, there is always a certain amount of lost motion or slack in a scale of this class. It is my object to keep this slack always in one direction. It is obvious that a shift of the center of gravity as described will change the slack in the mechanism so that inaccuracies of registration will result. And in addition such a shift will register on the dial any buckling or flexure of the casing or supports which form the fixed member 16 of the parallelogram. Therefore, since the flexure is always in the same direction in a scale embodying my invention, a lighter weight material may be used for the casing. In the arrangement which I have used, I desire to have the center of gravity back of the point 10, thus keeping number 12 in tension and 10 in compression. This permits to use a strip for member 12 as there will be no occasion for it to buckle. Likewise the form of the member 10, as made to resist torsional effect, provides a substantial structure to resist compression.

The further point C is moved from 18 the greater becomes the tension and compression in the members 12 and 10. As the width of the scale pan will allow some deviation in the locus of the center of gravity the relative change will be lessened the further the point C of application is removed from 18. Therefore it is desirable that the post 32 be carried as far back on the scale as is conveniently possible. The embodiment shown in Fig. 1 has a scale pan which does not overhang the back of the casing. The limitations in this respect are for utility and in no way limit the invention.

Other features of my invention relate to the positioning of the parallelogram in the casing. The fixed member 16 is at an angle to the vertical, which angle is that desired for the face 39 of the scale. The member 16, 11 and 39 then become parallel at all times and the distance between members 11 and 39 varies according to the angularity of the parallelogram. The dial 39 has a central opening for pin 40 having needle 41 and the pinion 42 thereon. The rack 27 is carried by member 11 parallel to it and pivoted to it at 43. In hanging freely on its pivot 43 the rack 25 moves to the left in Fig. 2 or against the pinion 42, which has a substantial width to accommodate the changing distance between the member 11 and 39. One of the screws 45 serves as a guide to prevent the pinion 42, rack 27 from falling away from the pinon 42.

The principle upon which the scale is built is capable of many variations for different purposes and these will naturally occur to those skilled in the art. While I have referred to my drawings to various members as the front, bottom and top members, and to certain directions as front and rear, these terms are in no way to be construed as limiting my invention.

The scales shown in the drawings are but one arrangement according to my invention and are shown for the purpose of illustration only. It is to be understood that other forms can be built which will exemplify my invention in a similarly precise manner, so that I desire the invention to be limited only by the appended claims.

I claim as my invention:

1. A scale mechanism having, in combination, a casing, four members arranged as a parallelogram, one of said members being fixed to the casing, the opposite being a rigid member and having a projection thereon, carrying a scale pan, the rigid member also having a spring extending to the casing, said spring being adopted to resist a weight on the scale pan, the position of the spring being such that the center of gravity of the weight when placed approximately centrally on the scale pan remains normally on the same side of the spring in the direction of the plane of the parallelogram.
2. A scale mechanism having, in combination, a casing, four members arranged as a parallelogram, one of said members being rigid with the casing, the opposite being a rigid means carrying a scale pan and other rigid means held by a tension device to the casing, the position of the tension force when the weight is placed approximately centrally on the scale pan being always on the same side of the center of gravity of the weight on the scale pan in the direction of the plane of the parallelogram.
3. A scale mechanism having, in combination, a casing, a rigid member, a scale pan on said member adopted to receive a weight, tension means between said member and the casing to resist the weight, a compression resisting link from one end of the rigid member to the casing, the scale pan being adapted when the weight is positioned approximately centrally on the scale pan to maintain the center of gravity of the weight thereon on one side of the line of action of the tension means.
4. A scale mechanism having, in combination, a casing, a rigid member, a scale pan on said rigid member adopted to receive a weight, resistance means between said member and the casing adapted to oppose the weight on the scale pan, a compression link from one end of the rigid member to the casing, and a tension link from the other end of the rigid member to the casing, the scale pan extending mainly on one side of the resistance means so that in normal use it will maintain the center of gravity of the weight thereon on one side of the line of action of the tension means in the direction of the links.
5. A scale mechanism having, in combination, a frame, a rigid member, a scale pan on said rigid member adopted to receive a weight, - resis-

tance means between the frame and the rigid member adapted to oppose the weight on the scale pan, a compression link from one end of the rigid member to the frame, and a tension link from the other end of the rigid member to the frame, the weight when positioned over the center of the scale pan having its line of application to the rigid member always on the same side of the line of application of the resisting means, whereby said links are properly held in tension and compression as required.

6. A scale mechanism having, in combination, a fixed member, a rigid member, a scale pan on said rigid member adopted to receive a weight, resistance means between said fixed and the rigid members adapted to oppose the weight, parallel links from said rigid member to the fixed member, the weight when positioned mainly over the center of the scale pan having its line of application to the rigid member always on the same side of the resisting means in the direction of the links, whereby said links are always in tension or compression as the case may be.
7. A scale mechanism having, in combination, a fixed member, a rigid member, a scale pan on said rigid member, adopted to receive a weight, resistance means between said fixed and the rigid members adapted to oppose the weight, links from said rigid member to the fixed member, the weight when positioned mainly over the center of the scale pan having its line of application to the rigid member always on the same side of the resisting means in the direction of the links, whereby said links are always in tension or compression as the case may be.
8. A scale mechanism having, in combination, a fixed member, a rigid member, a scale pan on said rigid member, adopted to receive a weight, resistance means between said rigid and the fixed members, adapted to oppose the weight, two links from said rigid member to the fixed member adapted to stabilize the rigid member, said links being adapted for tension or compression, the rigid member being held in stable equilibrium by the forces of the weight, the resisting means and the links, the relative direction of said forces about a fixed center remaining unchanged by shifting the weight on the scale pan so long as the weight is positioned approximately centrally on the scale pan.
9. A scale mechanism comprising a fixed frame, in members arranged as a parallelogram, one said members being fixed to the frame, the opposite member being a rigid member, the other member being links, resisting means acting on the rigid member from the frame in a substantially vertical direction, a scale pan carried by the rigid member having its area substantially offset along the direction of the link members from the line of action of the resisting means, whereby in the use of the scale the direction of the forces in the parallelogram remains unchanged by the shifting of the weight on the scale pan so long as the weight is positioned approximately centra-

lly on the scale pan.

10. In a scale mechanism having, in combination, members linked together, a scale pan to receive a weight and resisting means to oppose the weight, a lateral extension on one of said members to receive either one of the forces of the resisting means and the weight on the scale pan, pivotal connections between the links having some lost motion therebetween. the lateral extension serving to create distance between the lines of said forces, said distance remaining positive in one direction by shifting the weight centrally on the scale pan, whereby the lost motion in the linked members is maintained in the same direction.
11. A scale mechanism having a casing, four members in said casing pivoted as a parallelogram, the first of said members being fixed to the casing, an adjacent and second member being a member with substantial width and thickness to resist torsion and compression and having an opening therein, the next and third member being a rigid member having a substantial width and thickness to resist torsion, the fourth member being a single strip linking the first and third members adapted to resist tension, a bracket on the rigid member, extending rearwardly, having holes therein in vertical alignment, a scale pan and post thereon adapted to fit said holes in the bracket, a rearwardly extending ear on the rigid member, a tension spring extending from the ear to the casing in a substantially vertical direction, the bracket and the spring passing through the openings of the second member, and means on the rigid member to cause indication of the vertical displacement thereof by a weight on the scale pan.
12. In a scale having a scale pan and a weight register therein, a parallelogram linkage for said scale, said linkage having a member in the parallelogram adopted primarily for tension, said pan and weight register being so related to the linkage that said member is under tension when the weight is positioned on the scale pan with its center of gravity on the same side of the weight register as the center of said pan.
13. In a scale having a scale mechanism of the class described including a rigid member linked for motion substantially parallel to itself in different positions, a rack on said member parallel thereto adapted to engage a pinion, a bracket secured to said member by bent ears passing therethrough, an ear on said member being part thereof turned at an angle to the plane of the member, and channel sides on said member being integral therewith, the member being substantially a sheet of steel, struck out and turned to the form described.

In testimony whereof, I have hereunto affixed my signature.

MARIUS H. HANSEN

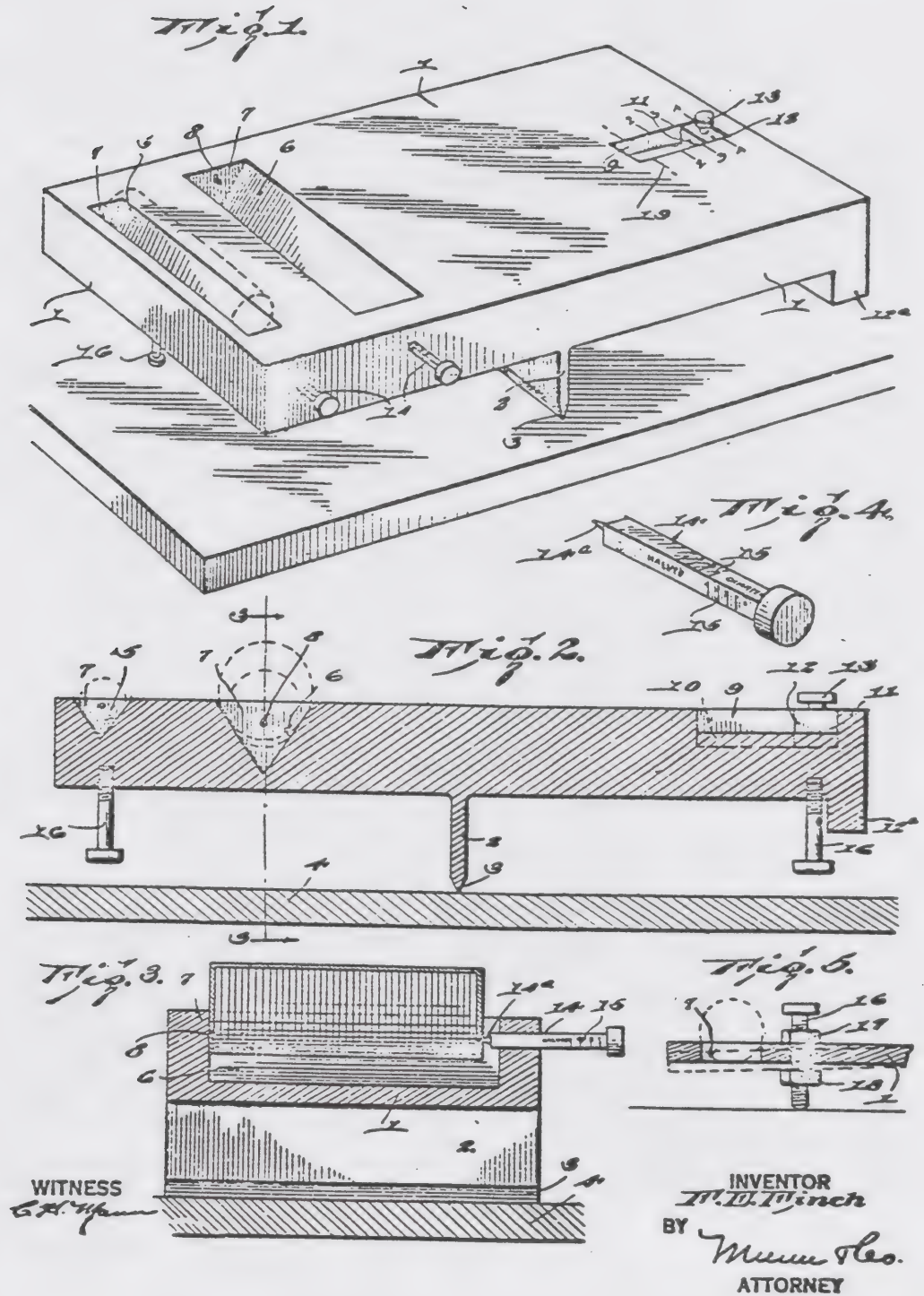
April 11, 1933.

F. E. FINCH

1,903,621

COUNT CHECKING DEVICE FOR PACKAGED COINS

Filed May 17, 1930



UNITED STATES PATENT OFFICE

FRED E. FINCH, OF READING, PENNSYLVANIA

COUNT CHECKING DEVICE FOR PACKAGED COINS

Application filed May 17, 190. Serial No. 453,325.

This invention relates to a devise for checking the count of coins in the roll packages used today in banking and business and is more particularly concerned with a device for checking the accuracy of the count by weight without unpackaging the coins or disturbing the wrapping; and with due compensation for loss in column height or length, and weight by wear, and with method involved therein.

Determination of accuracy of count by weight is predicated on the known fact that standard roll packages of new coins have definite weight relation; that the maximum wear in the column of coins in all or practically all standard packages will be less than the weight of one coin; and not more than three coins in the case of dimes; and that loss in column height or length through wear, due to the absorption of more of the thickness wear by the milled beaded edges of coins as compared to loss in weight, is substantially as four to one; and that shrinkage in length of a roll column of coins through wear from new column thickness to maximum wear thickness can be precalculated for gauging, and accurately compensated for balance.

United States coins are roll packaged in quantities of fifty "dimes"; forty "quarters" and twenty half dollars. The United States fixed relative weight standard of its coins, when new, permits proportioned leverage placement of rolls of different coins relative to a pivotal balance line or point of a coin supporting and weighing table or platform and the proportionate loss of weight to height or length in a standard roll or column of worn coins, permits a proportionate adjustment of a counter balancing weight at opposite side of the pivoted edge or point to compensate. Where the loss in column height or length compensated by corresponding proportionate adjustment of the counter balancing weight fails to balance and the roll of coins is overbalanced by the weight adjustment, a shortage of count or inclusion of smaller and lighter coin will be indicated. When balance is not attained with the proportionate counterbalancing adjustment made and the coin roll overbalances the counterweight, an overcount or excess in number of coins will be indicated or the inclusion of a different coin of coincident or smaller size and greater weight. In such cases, the roll pack age will require opening, examination and count.

A roll or column length (or height) caliper or gauge bar is used for standard coin roll packages of each denomination calibrated to indicate proportionate divisions or fractions of the maximum permissible loss of

length in height, with the calibrations extending from a point indicating the full count of new coins to the point indicating the maximum loss of length or height permissible in a full count of worn coins. If the caliper or gauge may be moved appreciably toward the pivotal point, a short count will be immediately indicated, and the device embodies this quick determining means for obvious shortage as one of its features.

The described features of the invention will be more clearly apparent from the following detailed description which is to be read in conjunction with the accompanying drawing forming part thereof and illustrating one form of the device.

In the drawing:-

Figure 1 is a perspective view of a count checking platform balance embodying the features of the present invention.

Figure 2 is a longitudinal vertical section thereof.

Figure 3 is a transverse vertical section on line 3-3 of Figure 2 with the caliper bar shown in cooperative gauging relation to a roll package of coins, in this instance representing "quarters".

Figure 4 is a detailed perspective view of the quarters and half dollar caliper bar.

Figure 5 is a detailed section of a modification, illustrating a visual indicator hereinafter described.

In the drawing a flat rectangular plate 1 which may be of any suitable material such as wood, cast aluminum, etc., is provided midway of its length with a perpendicular transverse rib 2 or any equivalent pivoting means, said rib having its lower edge beveled to a knife edge 3, and providing a transverse knife edge balance or balance line. 4 indicates a plane surface, such as a bank counter, desk or table top upon which the knife edge balance may rest.

At one side of the balancing edge, I provide the platform, plate scale or balance thus formed with troughs or receptacles for standard packages or rolls of different coins, these seats having abutments designed to engage one end of the coin roll package. Conveniently, such seats may be formed by V-shaped grooves such as the grooves 5 and 6 shown in Figs. 1 and 2, cut or cast in the top face of the plate 1 with the plate of end of the coin roll packages seating therein and since it is desired, in accordance with my invention, to measure the length of the coin column with these packages I provide the end abutment walls 7 with inwardly facing pointed contact studs 8 of predetermined length which will penetrate the material of the coin package and engage the coin column at one end of its coin column, -thus making

it unnecessary to disturb the wrapper of the package.

In order to provide a gauge for determining the loss of weight by wear for a full count of coins of each denomination proportioned to their loss of column length by wear, I have established by experimentation the length of the coin columns of full count packages of coins of different denominations and the maximum loss in length of full count coin columns of the same denominations through maximum permissible wear, and have determined by experiment and calculation that such coin columns lose weight in proportion to loss in column length in the ratio of approximately one to four.

The official standard weight of new United States coins makes the fifty dimes, (new), contained in the standard fifty dime roll package equal in weight to twenty new quarters and ten new half dollars, and standard roll packages contain forty quarters and twenty half dollars, each, when new, weighing twice as much as the fifty new dimes. In view of this fact, I have selected the dime package as a basis of calculation and balance. The coin trough 5 is intended, in the illustrated form of my device, to seat the standard dime roll package. At the opposite side of the knife edge balance or other pivotal point of device there is provided an elongated recesses 9 which, in the event of the plate 1 being made of thin metal, might well be substituted merely by a slot. The recess 9 extends longitudinally of the plate 1. The base of the recess is provided with a longitudinal rib 10 which is straddled by the bifurcated lower face 11 of an auxiliary counter weight 12. This fits the sides of the recess rather closely and has an up-standing thumb hold 13 by which it is moved back and forth.

The weight 12 supplements a permanent counter weight 12^a which is made integrally with the with the plate 1 in any suitable manner. This main or permanent counter weight is but little less in weight than a column of fifty new dimes, which column is herein taken as a standard. The actual counter balancing action is accomplished by the auxiliary counter weight 12, and by virtue of the near balance which is arrived at by the main counter weight 12^a it becomes possible to space the calibrations 19 (Fig. 1) rather far apart so that considerable leeway is allowed in making the adjustments of the auxiliary counter weight in determining a coin count.

In other words, were it not for the main counter weight 12^a and the stated function which it performs, all of the balancing action would rest with the auxiliary counterweight 12 with the consequent disadvantage of having the readings along the scale 19 so narrowly spaced as to make it difficult to place the auxiliary counter weight at its settings. In practice the recess 9, or slot, if that be used, will be appreciably longer than indicated. The distance between the graduations 19 will also be appreciably greater. The result is that the counter weight may be moved back and forth in proximity to the various graduations with utmost freedom without the operator having to constantly be on guard for the "breaking point" of the scale. This feature works out in practice to the extent that as much as 1/2" vari-

ation will be on either side of a given graduation, thus taking into account any possible variation in coin thicknesses and column heights, or in other words combinations of old and new coins in a different package. The quarter and half dollar trough 6, designed to hold standard packages of forty quarters and twenty half dollars, whose weight, when new, is each twice that of the fifty new dimes, is like the dime trough in parallel to the knife edge blade 2 and is centered on a line exactly half way between the center line of the dime trough 7 and the line of the knife edge 3 so that the leverage against the weight 12 being reduced to half, the counter weight 12 in its normal position alined with calibration "4" will also balance the forty new quarters and twenty new half dollars of such standard packages. Obviously troughs for other coins may be provided, centered on that line parallel to the knife blade 2 and troughs 5 and 6 predetermined by the proportionate weight of its full count of new coins to that of the full count of new dimes, the length of the plate 1 and position of the counter weight, of course being predicated on the number of troughs used, and on the weight of plate 1 at the coin trough side of the balancing knife edge. The calibration 19 edging the slot 9 may be sub-divided as suggested in Fig 1 and the top face of the counterweight 12 may have a registering line such as shown, or a pointer.

The counter edge face of the scale plate 1 in line with the coin package troughs which as shown, terminating inwardly of said edge, is bored is bored horizontally through on the longitudinal axis of the troughs to receive and guide caliper or gauge rods or bars 14, preferably rectangular in cross section to provide a plurality of faces for calibrating and having their inner ends provided with axially and inwardly extending pointed prongs 14a of determined length to penetrate the material of the coin package and contact the outer end coin of the coin column therein, the inner end coin being similarly contacted the pointed ends of studs 8 at the opposite ends of the troughs. As a variation of this arrangement the calipering may be accomplished by merely graduating one or both edges of the coin troughs or receptacles an distance back from one end agreeing with columns of new and variably worn coin columns.

The lengths of the coin columns in respect to the extremes of full count new coins and full count worn coins of maximum permissible wear, are indicated by calibrations 15 determinately located on the face of the gauge bars 14 and indicating with reference to the outer edge face of the plate 1, the length of the coin column of a package with respect to proportionate degrees of loss of column length through wear up to the maximum permissible by wear of a full count of the particular denomination of coin.

Where, as in trough 6, packages of coins of different denominations, quarters and half dollars, are to be seated, the gauge bar 14 for that trough will have two of its faces differently calibrated, one for each coin denomination as shown in Figure 4. In case the edge graduations are employed in lieu of the bar 14, the marks would be of variable length so that

quarter and half dollar denominations are readily distinguishable. It is to be clearly understood that the indication of the gauge bar calibrations, or edge graduations, are to be read in direct combination with the auxiliary counter weight 12 in determining a coin count. The gauge bar is to be regarded as a preliminary or initial checking means on the coins solely for the purpose of establishing the fact that a given column contains new, worn or mixed coins. The later adjustment of the auxiliary slideable counter weight 12 will indicate the count of coins in the package when a balance is arrived at. The gauge calibrations 15 are scaled in two or more divisions representing the relation of loss of column length to loss by weight and the calibrations edging the counterweight recess 9 are similarly scaled with the weight leverage position of the counter weight 12 in the scaled position precalculated to offset and counter balance a loss in weight by wear.

The coins of a package, if a full count, should, therefore, balance with the counter weight adjusted to the calibration proportioning the loss of weight to loss of column length and preferably indicated by a corresponding scale numeral. If, on the other hand, the coin column length loss indicated by a calibration 15 is within the maximum permissible length loss, but, the coins in the package are of mixed denomination and weights, the counter weight when adjusted to the calibration indicated by the gauge calibration for full count, will not balance the scale platform but will over or under balance. Thus a determinate accurate check of full coin count is afforded and recount of all coin roll package is avoided, only those being recounted which gauge calibration or scale weighing indicate as "short" or "long". Under balance by the counter weight when properly adjusted will indicate the presence of a heavier coin of substantially similar size and different denomination as for example a foreign coin, or a gold coin, and over balance, similarly a lighter coin.

To facilitate the operation of weighing and prevent excessive tilting on the knife edge balance, or other pivotal point, abutment studs 16 depend from the under face of the plate 1 at joints equidistant from the balancing knife edge. The double "click" or "tap" of these studs on the counter or table will furnish a quick and audible signal of balance.

As a variation of the foregoing audible signal of the accomplishment of the balancing arrangement in Figure 5 may be adopted. This is a visual signal. The stud 16 (at the left) is here shown in combination with a thin scale plate 1. It is equipped with jam nuts 17, 18 which are so spaced that when the point of the stud touches the counter or table and is thereby stopped, the remaining movement of the plate 1 to the final and dotted line position will in effect make a departure of the stud 17 from the top face of the plate thus, indicating to the observer that the balance has been reached. This arrangement and operation is predicated on a loose mounting of the stud 16. In practice it will be desirable to make the stud as light as possible so that there will be no chance of a false reading.

The device is relatively simple in structure and may be accurately made. Initial balance adjustment having been made, and gauging calibrations checked, there is nothing in ordinary use to breed inaccuracy. The package penetrating coin contacting tips 8 and 14^a may be of or coated with wear resisting material so that their accuracy of measurement will be maintained. Means of any desired character may be used to fix and detachably maintain the counter balancing weight 12 in an adjusted position so that it will not move as the plate oscillates. The particular form of the device disclosed illustrates the operative principle of the invention but is intended merely as illustrative thereof and not restrictive, and may be modified in consonance with the spirit of the invention and the scope of the appended claims.

I claim:

1. A device for checking the full count of standard packages of coins by weight comprising a plate balance scale having a coin package seat thereon having a coin column end abutment, gauge means associated with said seat to initially measure the length of said column, said gauge means having associated calibrations in terms of degrees of permissible loss of column length through wear in a full count of coins of the said selected denomination up to the maximum permissible length wear for full count, and a weight on said plate opposed to said package seat normally positioned therein to counter balance the weight of a full count package of new coins of the selected denomination on said seat, and arranged for adjustment from said normal position to calibration-indicated positions coordinating and counterbalancing proportionate weight loss to the coin column length loss by a gauge calibration.
2. A device for checking the full count of standard packages of coins by weight comprising a plate scale having an intermediate balance point with a coin package seat on said plate at one side of said balance point, a caliper bar mounted on said plate for movement longitudinally of the coin column of a package engaging said seat at one end to engage the other end of said coin column and measure its length, said caliper bar having associated calibrations in terms of degrees of permissible loss in column length through wear in a full count of coins of the denomination being measured up to the maximum limit of wear for full count, and counter balance on said plate at the side of said edge opposite to the coin package, normally positioned to balance the weight of a full count package of new coins of corresponding denomination and mounted for movement relatively to said balance point from position of full count new coin balance to calibration indicated positions providing counter balancing weight corresponding to the proportionate weight loss indicated by the degree of coin column length loss indicated by said caliper bar calibration reading.

3. A device for checking the full count of standard roll packages of coins by weight comprising a platform balance having a pivotal support and a coin trough therein at one side of said pivotal support, having an abutment engaging one end of the coin package, a caliper bar mounted on said platform to slide longitudinally of the trough from one end thereof to contact the other end of the coin package and measure the length of the column of coins in said package, said caliper bar having associated calibrations in term of degrees of permissible wear loss in column length by wear for full count of the coins of the denomination being measured and cooperating with said platform to indicate the loss defining calibration, and a counter weight on said platform at the side of said pivotal support opposite to the coin package trough having a normal position relatively to said pivotal support to balance the weight of a full count package of new coins of that denomination in said trough and mounted for counter balance adjustment relatively to said pivotal support and to platform calibrations coordinating loss to weight by wear to the loss in column length by wear indicated by said caliper bar calibrations.
4. A device for checking the full count of standard coin roll packages by weight comprising a plate having an intermediate balance point and a coin roll seat thereon at one side of said balance point provided with a roll end abutment penetrating the roll and engaging the coin at one end thereof, a gauging bar mounted on said plate for sliding movement longitudinally of the coin column and having its inner end formed to penetrate the other end of the coin roll to contact the end coin therein and measure the length of the coin column, said gauge bar having associated calibrations extending from the length point of a full count column of new coins of the denominations being measured, to the length point of maximum permissible wear in said full count column and cooperating with said plate to indicate the degree of loss of length in the coin column by wear, and a weight mounted on said plate at the side of said balance point opposite to the coin roll normally positioned relatively to said balance point to balance the weight of a full count package of new coins of the denomination being measured, said weight being mounted for adjustment from said normal point toward said balance point, and relatively to plate calibrations proportioning the coin weight loss compensating adjustment of said weight to the coin column length loss indicated by the gauge bar calibrations.
5. A device for checking the full count of standard roll packages of coins comprising a plate having a transverse intermediate balance line, a dime roll trough in said plate at one side of and in parallel to said balance line and determinately spaced therefrom and having an abutment engaging one end of a dime roll therein, a counter weight on said plate at the opposite side of said balance line normally positioned thereon relatively to said length line to balance the weight

of a full count roll of new dimes in said dime roll trough, a combined quarter and half dollar roll trough in said plate extending in parallel to said balance line and located midway between said line and dime roll trough to half the double weight of standard new quarter and half dollar rolls and balance with said counter weight, said trough having an abutment to engage one end of a coin roll therein, caliper bars mounted in said plate for sliding movement longitudinally of the troughs to engage the ends of the rolls opposite to the trough abutments and measure the lengths of the coin columns of said rolls, said bars having associated calibrations in degrees of loss in coin column lengths from the maximum of full count new coin length to the minimum of full count worn coin length, said counter weight being mounted for adjusting movement relatively to said balance line, said plate having calibrations thereon cooperating with said counterweight and coordinated to the loss of coin column lengths indicated by bar calibrations to counter balance by calibrated adjustment of said weight the coin column weight loss proportionate to the loss in coin column length by wear.

6. A device for checking the full count of standard coin roll packages comprising a table scale having an intermediate transverse balancing line, a plurality of coin package balancing line, a plurality of coin package seats thereon at one side of said balance line for standard coin packages of different denominations, a counter weight on said table at the opposite side of said balance line positioned thereon to counter balance the weight of a full count package of new coins on one of said seats with the remaining coin seats positioned in that leverage ratio to the balance line to equal the weight of their full count coin packages, through proportionate leverages to that of the first balanced coin package of a different denomination of coin.
7. A device for checking the full count of standard coin roll packages comprising a table scale having an intermediate transverse balancing line, a plurality of coin package seats thereon at one side of said balance line for standard coin packages of different denominations, a counter weight on said table at the opposite side of said balance line positioned thereon to counter balance the weight of a full count package of new coins on one of said seats with the remaining coin seats positioned in that leverage ratio to the balance line to equal the weight of their full count coin packages, through proportionate leverages, to that of the first balanced coin package of a different denomination of coin, means for gauging the coin column length of coin packages on said seats and for calibrating in degrees the limits of permissible loss of column length of full count package through wear from its full count new coin length and means for adjusting said counter weight relatively to said balance line to determine by proportion counter balancing leverage to loss of weight in a full count column of coins through wear to the extent calibrated by said gauging means.

8. In a device for checking the full count of standard packages of coins, a base providing a coin package seat and an abutment to engage one end of the column of coins in a package, and a gauge mounted on said base for movement to contact the opposite end of said coin column to measure its length, said gauge having associated calibrations to indicate the limit of reduced column length by maximum permissible wear of a full count of coins of a specific denomination from the full column length of a full count of new coins of that denomination.
9. In a device for checking the full count of standard packages of coins, a base having a coin seat thereon provided with an abutment to engage one end of a coin package and formed to penetrate the material of said package and engage the coin at one end of the coin column therein, and a gauging bar mounted on said base for movement to contact one end thereof with the opposite end of the coin package to measure the length of its coin column, said gauging bar end being formed to penetrate the material of the package to engage the coin at that end thereof, said bar having associated calibrations to indicate the limit of reduced column length by maximum permissible wear of a full count of the determination of coin being measured from the full column length of the coin column of a full count package of new coins of that denomination.
10. A device of the character described comprising a pivoted plate, means at one end of the plate for receiving a column of coins, a main counter balance at the other end of the plate being slightly less in weight than a given column of new coins of a determined denomination, an auxiliary weight movably mounted on said other end of the plate for producing an over-balancing motion of the plate in the direction of the coin column, and means movably associated with said one end of the plate, being subject to movement at the approximate completion of the overbalancing act thus to provide a visual indication of said act:
11. A device for checking the full count of coin packages comprising a plate having transverse balancing means, a dime package trough in said plate at one side of the balancing means and determinately spaced therefrom, a counterweight on said plate at the opposite side of said balancing means normally positioned thereon relatively to said balancing means to balance the weight of a full-count package of new dimes in said trough, a quarter and half dollar trough in said plate located midway between said balancing means and the dime package trough, said counterweight being mounted for adjusting movement relative to said balancing means, said plate having calibrations cooperating with said counterweight.

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June 6, 1944.

W. H. PARNELL

2,350,414

COIN TESTER

Filed June 5, 1941

2 Sheets—Sheet 1

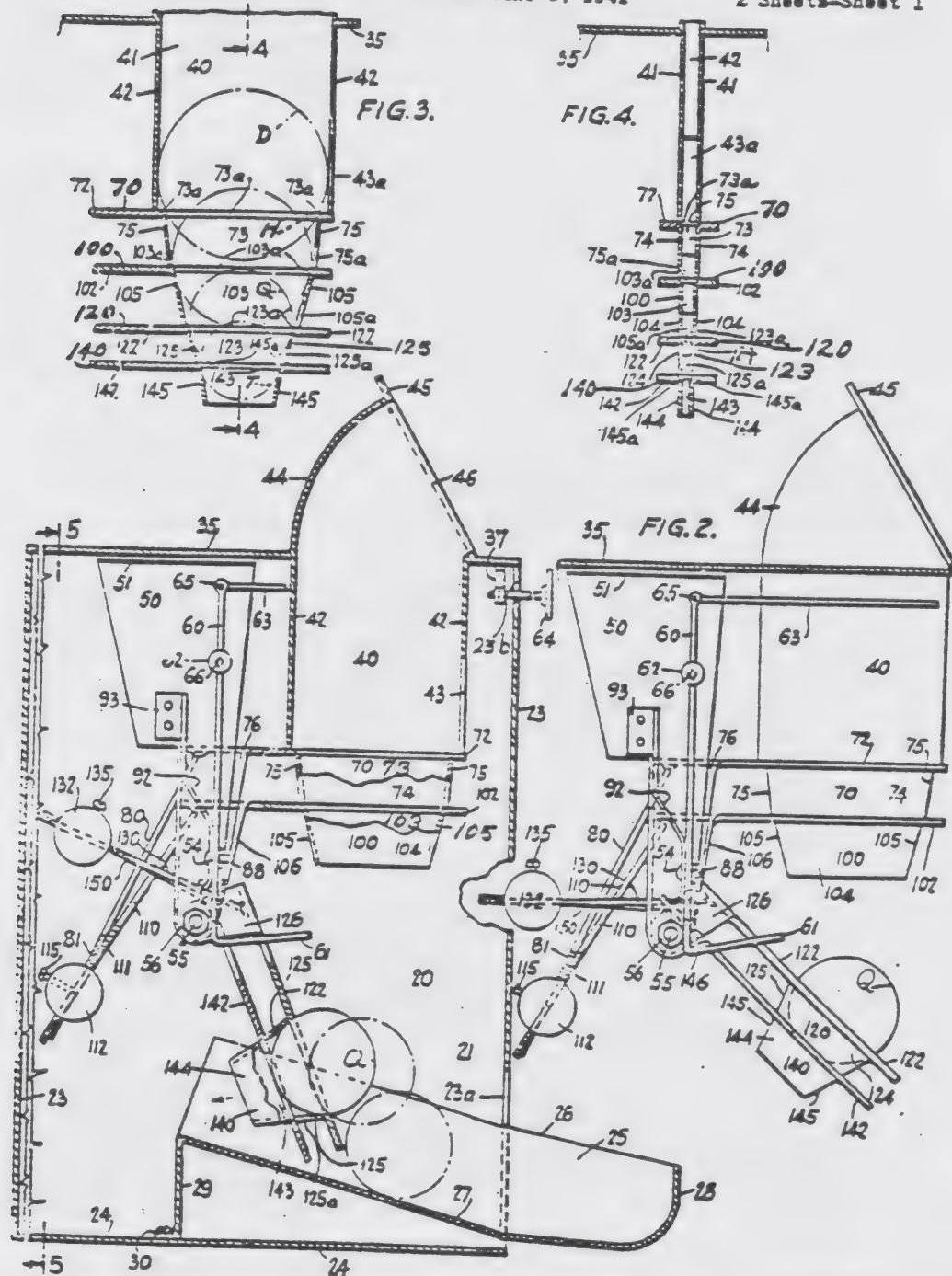


FIG. 1.

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COIN TESTER

Filed June 5, 1941

2 Sheets-Sheet 2

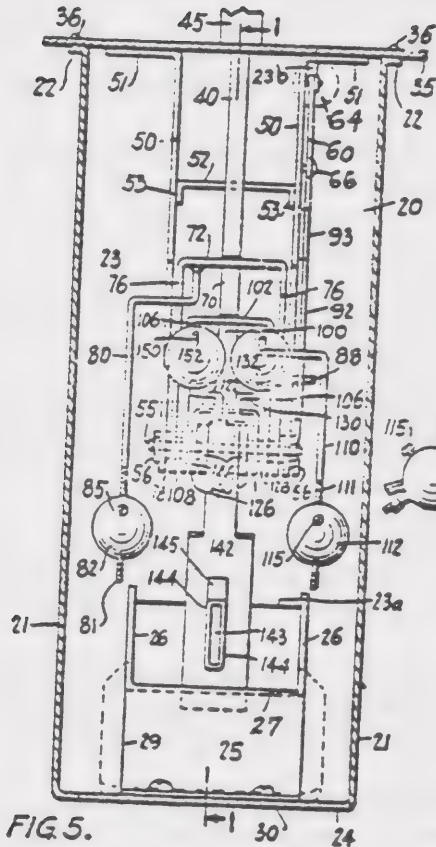


FIG. 5.

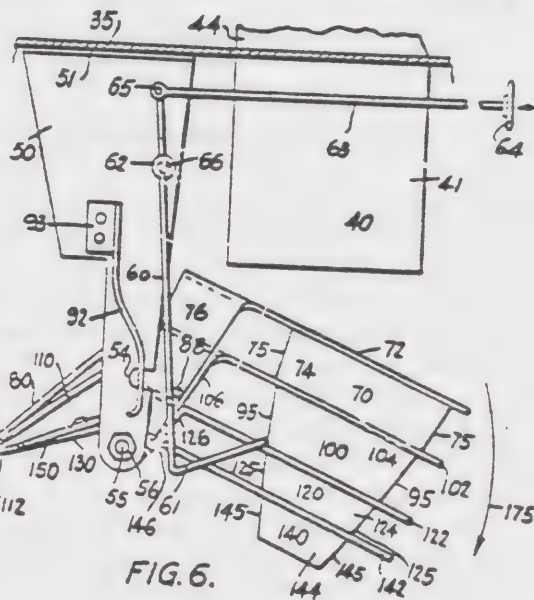


FIG. 6.

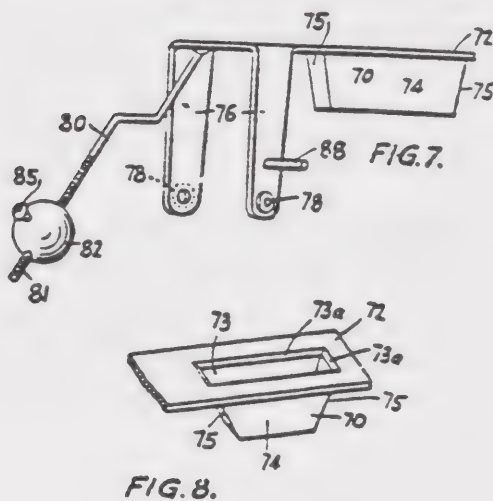


FIG. 8.

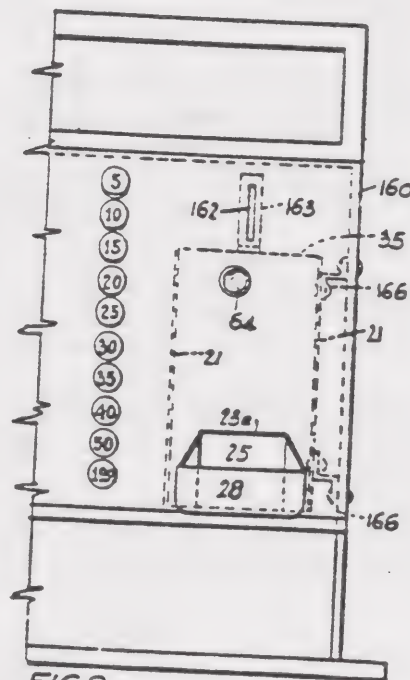


FIG. 9.

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[II-2F-18A]

Patented June 6, 1944

2,350,414

UNITED STATES PATENT OFFICE

2,350,414

COIN TESTER

Walter H. Parnell, Brooklyn, N. Y., assignor of
one-fourth to Leo Eisenberg, one-fourth to
Wilbur A. Wourters, one-fourth to Nathan
Rethenberg, all of Brooklyn, N. Y.

Application June 5, 1941, Serial No. 396,683
3 CLAIMS (cl.265-50)

This invention relates to a coin tester.

The object of the invention is the production of a tester, by means of which coins, which are under weight are easily detected.

The second object of the invention is the production of a tester by means of which coins of different denominations can be tested, to indicate whether they are underweight.

The third object of the invention is the production of a coin tester, which can be used independently of other apparatus, and which can be connected to or positioned in other apparatus, such as a cash register.

The fourth object of the invention is the production of a coin tester, which has connected thereto means to easily eject coins therefrom, which are underweight.

The fifth object of the invention is the production of a coin tester, which provides means to quickly detect coins which are underweight.

The sixth object of the invention is the production of a coin tester, which has one inlet conduit for the testing of coins of different denominations.

The seventh object of the invention is the production of a coin tester, which can be readily inspected and adjusted.

The eighth object of the invention is the production of a coin tester, which saves time in providing a quick means to classify coins as to their weight.

The ninth object of the invention is the production of a coin tester with only one inlet opening for a plurality of coins to be tested.

PATENT NO. 2,350,414

[CHP. II : SEC. 2F]

[II-2F-18B]

The organization of the invention comprises one of a plurality of lever, which coins may be dropped to swing them sufficiently when the coins are the required weight to enable the coins to roll therefrom, and which do not roll therefrom when not of sufficient weight.

It is well known that some counterfeit coins weigh less than genuine coins, and the operation of the detector is based upon this fact.

Various other objects of the invention will be apparent from the claims, specification and drawings.

Fig. 1 represents a side elevation of the coin detector and partial section as on the line 1-1 of Fig. 5; Fig. 2 is a view similar to Fig. 1 with some of the movable parts in a different position, and other portions in full lines; Fig. 3 is a partial section of Fig. 5 on the line 1-1; Fig. 4 shows a section of Fig. 3 on the line 4-4 of Fig. 3; Fig. 5 is a partial section of Fig. 1 on the line 5-5 and a left hand view of said Fig. 1; Fig. 6 is a view similar to Fig. 2 with the moveable elements in a different position; Fig. 7 represents a perspective view of some details; Fig. 8 indicates a portion of Fig. 7 in perspective and Fig. 9 indicates a fragmentary portion of a cash register with the coin detector positioned therein.

A housing 20 for the coin detector comprises the side walls 21, the flanges 22 at their top ends, the end walls 23 and the bottom wall 24. One of the walls 23 is shown with the opening 23a at its lower end and the slot 23b at its top end.

A discharge chute 25 comprises the side walls 26, the inclined bottom wall 27, the cup shaped end wall 28 and the supporting wall 29 having the flange 30, which latter is fastened to the wall 24.

A cover 35 is supported on the flanges 22 and is fastened in place by the screws 36. From the cover 35 extends the supporting bracket 37.

The cover 35 has integral therewith the main inlet conduit 40 rectangular in cross-section and is shown with the side walls 41 and the end walls 42. In one of the walls 42 is shown the clearance opening 43a. The conduit 40 extends above the cover 35, with the curved upper portion 44 for one of the ends walls 42. An inclined flange 45 is shown at the upper end of the conduit 40, with the inlet opening 46.

A pair of brackets 50 are each shown with a foot 51 at the upper end and the latter are fastened to the cover 35.

A brace 52 with the flanges 53 connects the brackets 50. A clearance opening 54 is shown in one of the brackets 50.

A shaft 55 having threaded ends is tightly supported in the lower ends of the brackets 50, and nuts 56 securely clamped the shaft 55 in place.

A release lever 60 is shown with a hook end 61 at its lower end, and the hub 62 adjacent to its upper end. An operating rod 63 is shown with the disc handle 64 at one end and is pivoted at its other end to the release lever 60 by means of the pin 65. The rod 63 at one end is slidably supported by the bracket 37.

A pin 66 extends from one of the main brackets 50 and leads through the hub 62 to support the release lever 60.

An upper conduit lever is designated in its entirety by the numeral 70. The lever 70 comprises the upper plate 72, which has integral therewith the conduit 73 with the tapered portions 73a at its upper end, see Fig. 8. The conduit 73 is indicated with the side walls 74 and the slightly tapering end walls 75. One of the walls 75 has the clearance opening 75a. The conduit 73 connects with the conduit 40, when the lever 70 is in its uppermost position, see Figs. 3 and 4. A pair of arms 76 extend at right angles from the plate 72. Hubs 78 extend from the outer faces of the lower ends of the arm 76. The arms 76 are supported on the shaft 55. The plate 72 has extending therefrom the counterweight rod 80, which is threaded at its lower end as shown at 81, for the counterweight 82 to be adjustably connected thereto. A set screw 85 clamps the counterweight 82 in operative position.

A pin 88 extends from one of the arms 76 and is adapted to enter the clearance opening 54 of one of the brackets 50.

A spring 92 with the foot 93 has the latter fastened to the bracket 50 having the opening 54.

The operating rod 64 extends through the slot 23b.

A second conduit lever is designated in its entirety by the numeral 100 and is similar to the conduit lever 70.

The lever 100 comprises the upper plate 102, which has integral therewith the conduit 103 having the side walls 104 and the slightly tapering end walls 105. One of the end walls 105 has a clearance opening 105a similar to 75a. The conduit 103 functions with the conduit 73, when the lever 100 is in its upper position, see Figs. 3 and 4. The conduit 103 extends through the upper plate 102, with the tapered portions 103a similar to 73a.

A pair of arms 106, similar to 76, extend at right angles from the plate 102. Hubs 108 similar to 78 extend from the outer faces of the arms 106. The arms 106 are supported on the shaft 55.

PATENT NO. 2,350,414 - continued

The plate 102 has extending therefrom the counterweight rod 110, which is threaded as shown at 111, for the counterweight 112 to be adjustably connected thereto. A set screw 115 clamps the counterweight 112 in operative position.

The conduit 103 functions with the conduit 73, when the lever 100 is at its normal top position.

A third conduit lever similar to those described is designated in its entirety by the numeral 120. The lever 120 comprises the upper plate 122, which has integral therewith the conduit 123 having the side walls 124 and the slightly tapered end walls 125.

One of the walls 125 has a clearance opening 125a similar to 105a. The conduit 123 functions with the conduit 103, when the lever 120 is in its upper position. The conduit 123 extends through the plate 122, and its upper ends are tapered as indicated at 123a similar to 73a. A pair of arms 126 similar to 106 extend at right angles from the plate 122. Hubs 128 similar to 78 extend from the outer faces of the arms 126. The arms 126 are supported on the shaft 55.

The plate 122 has extending therefrom the counterweight rod 130, which is threaded for the counterweight 132, to be adjustably connected thereto. A set screw 135 clamps the counterweight 132 in operative position.

A fourth and the lowest conduit lever, similar to those described is designated in its entirety by the numeral 140.

The lever 140 comprises the upper plate 142, which has integral therewith the conduit 143, having the side walls 144 and the slightly tapering end walls 145. The walls 144 and 145 are shown with the tapered upper ends 145a similar to 73a, see Fig. 8.

The conduit 143 functions with the conduit 123, when the lever 140 is in its upper position, see Figs. 3 and 4.

A pair of arms 146, similar to 126 extend at right angles from the plate 142. Hubs 148 similar to 78 extend from the outer faces of the arms 146. The arms 146 are supported on the shaft 55.

The plate 142 has extending therefrom the counterweight rod 150, which is threaded for the counterweight 152, to be adjustably connected thereto. A set screw, not shown, clamps the counterweight 152 in operative position.

Referring to Fig. 4 it will be noted that the side walls 74 are somewhat closer together than the walls 104, and that the walls 124 are somewhat closer together than the walls 104, and the walls 144 are somewhat closer together than the walls 124.

Referring to Fig. 9 the coin detector is positioned and secured in place on a cash register designated in its entirety by the numeral 160. An inlet opening 162 is shown for the conduit, 163, which extends to the flange 45 of the inlet conduit 40 of the coin detector. The side walls of the housing of the coin detector are again indicated at 21. Brackets 166 hold the housing of the coin detector in place in the cash register. The discharge chute of the coin detector is again indicated at 25 and the disc handle is again shown at 64.

Referring to Fig. 3, a silver dollar coin is indicated at D, which extends from the main conduit 40 into the conduit 73, and the circumferential edge of the coin D bears on the tapered portions 73a of the end walls 75.

A half dollar silver coin is shown at H, which extends from the conduit 73 into the conduit 103, and the circumferential edge of the coin H bears on the tapered portions 103a of the end walls 105.

A twenty-five cent silver coin is shown at Q, which extends from the conduit 103 into the conduit 123, and the circumferential edge of the coin Q bears on the tapered portions 123a of the end walls 125.

A ten cent silver coin is shown at T, which extends from the conduit 123 into the conduit 143, and the circumferential edge of the coin T bears on the tapered portions 143a of the end walls 145.

It will be noted that all the operative mechanism of the coin detector extends from the cover 35 into the housing 20.

To use the coin detector the conduit levers 70, 100, 120 and 140 are located in their upper positions, by virtue of the counterweights 81, 112, 131 and 152, see Fig. 5.

We may suppose a genuine silver dollar coin D is passed through the inlet opening 46, Fig. 1 to enter the main inlet conduit 40. The said dollar D drops into the upper end of the conduit 73, Fig. 3, of the conduit lever 70. The weight of the coin swings down all the conduit levers in the direction of the arrow 175, Fig. 6. The coin D then passes through the clearance opening 43a of the main conduit 40, Fig. 3, and drops into the discharge chute 25, from which it can be easily removed. If the coin is underweight, all the conduit levers as previously stated will not swing sufficiently to permit the dollar coin D to roll from the conduit lever 70 into the discharge chute 25.

On the discharge of the genuine silver dollar D, the conduit levers, are all swung up to their original positions by their counterweights.

If the coin is underweight, the operator in order to remove the coin from the detector bears on the disc handle, and the release lever 60 bears against the pin 88, and thereby all the conduit levers swing down as shown in Fig. 6, and the coin rolls from the conduit 73 of the lever 70 into the discharge chute 25. When the operator releases the disc handle 64, the counterweights cause the conduit levers to swing to their original positions as indicated in Figs. 3 and 4. When the conduit levers swing up the pin 88 bears against the release lever 60, which in turn bears against the spring 92, which latter functions as a shock absorber.

If a silver half dollar coin H passed through the inlet opening 46, to enter the main inlet conduit 40, the half dollar coin H drops into the conduit 103 of the second conduit lever 100, and if a good coin it swings down the conduit levers 100, 120 and 140 in the direction of the arrow 175. The coin H passes through the clearance opening 75a of the conduit 73 and rolls from the conduit 103 of the lever 100 into the discharge chute 25, from which latter it can be easily removed. If the half dollar coin H is underweight, the conduit levers 100, 120 and 140 will not swing enough to permit the coin to roll from the conduit 103 of the lever 100. In such a case to remove the coin from the detector the operator bears on the disc handle 64, and the release lever 60 bears against the pin 88, and thereby the conduit levers swing down as shown in Fig. 6, and the coin rolls from the conduit 103 of the lever 100 into the discharge chute 25. When the operator releases the disc handle 64, the counterweights swing all the conduit levers to their original positions as indicated in Figs. 3 and 4.

If a twenty-five cent silver coin Q is passed through the inlet opening 46 to enter the main conduit 40, the twenty-five cent coin drops into the conduit 123 of the conduit lever 120, and if a good coin swings down the conduit lever 120 and also the fourth conduit lever 140, in the direction of the arrow 175. The coin if of the required weight passes through the clearance opening 105a of the conduit 103 of the lever 100, to drop from the conduit 123 of the lever 120 into the discharge chute 75, see Fig. 1.

If the twenty-five cent coin is underweight, see Fig. 2, the conduit levers 120 and 140 will not swing enough to permit the twenty-five cent coin to roll from the conduit 123 of the lever 120. In such a case to remove the coin from the detector, the operator bears on the disc handle 64, as described for the uppermost and second conduit levers and the coin then rolls from the conduit lever 120 into the discharge chute 25.

If a ten cent silver coin T, is passed through the inlet opening 46 to enter the main conduit 40, the ten cent coin T drops into the conduit 143 of the fourth conduit lever 140, and swings down the lever 140, in the direction of the arrow 175, and if the coin is of sufficient weight the coin rolls from the conduit 143 into the chute 25.

If the ten cent coin is underweight the conduit lever 140 will not swing enough to permit the ten cent coin T to roll therefrom. In such case the operator bears on the disc handle 64 to remove the coin as described for the other conduit levers.

It will be noted that when the conduit levers swing down, see Fig. 6, the pin 88 will contact with the hook end 61 of the release lever 60 and prevent the conduit levers 70 swinging too far. The contact of the pin 88 with the hook end causes the positive discharge of any of the coins from the conduit levers.

Various modifications may be made in the invention, and the present exemplification is to be taken as illustrative and not limitative thereof.

I claim-

1. In a coin tester the combination of a housing, a detachable cover at the upper end of the housing, a main inlet conduit for coins to be tested extending from the outside of the cover to the inside of the housing, said main inlet conduit having side walls and end walls, a pair of brackets, spaced from each other extending from said cover, a shaft with its ends supported in the lower ends of said brackets, a pair of counter balanced conduit levers, one over the other and in vertical alignment with each other hinged to said shaft. the conduits of the levers decreasing in size from the top one to the bottom one, the conduit of each of the levers comprising side walls and a pair of end walls, one end wall of the main inlet conduit and one end wall of the upper lever conduit each having a clearance opening at its lower portion whereby the upper part of a coin of proper weight supported by a lever may upon tilting of the lever pass through the clearance opening, immediately above, said main conduit adapted to permit coins of different denominations to pass therethrough, a manual release lever pivoted to one of said brackets, a hook end at the lower end of said release lever, a pin extending from the top conduit lever adapted to be engaged by the release lever and a discharge chute for the coins at the lower end of the housing extending from the inside to the outside thereof.
2. In a coin tester the combination of a housing, a detachable cover at the upper end of the housing, a main inlet conduit for coins to be tested extending from the outside of the cover to the inside of the housing, said main inlet conduit having side walls and end walls, a pair of brackets spaced from each other extending from said cover, a shaft with its ends supported in the lower ends of said brackets, a pair of counterbalanced conduit levers, normally in vertical alignment with each other and said main inlet conduit, said levers hinged to the shaft, the conduits of the levers decreasing in size from the top one to the bottom one, the conduits of each of the conduit levers

comprising side walls and a pair of end walls, one end wall of the main inlet conduit and one end wall of the upper lever conduit each having a clearance opening at its lower portion whereby the upper part of a coin of proper weight supported by a lever may upon tilting of the lever pass through the clearance opening immediately above, said main conduit adapted to permit coins of different denominations to pass there-through, each conduit lever having extending therefrom a pair of arms, a hub at the lower end of each arm, whereby each pair of arms is hinged to the shaft at the lower ends at the brackets.

3. In a coin tester the combination of a main inlet conduit having side walls and end walls, a plurality of hinged counterbalanced levers normally positioned on line one over the other below said main inlet conduit, each lever having a conduit; the conduits of the levers progressively decreasing in size from the top to the bottom, the conduits of each of the levers comprising side walls and a pair of tapered end walls, one of the end walls of the main inlet conduit, and of each of the lever conduits except the lowermost having a clearance opening at its lower portion, said main conduit adapted to permit coin of different denominations to pass therethrough, the conduit of the upper most lever adapted to temporarily hold the largest coin to be tested and the conduits of the levers below the top one adapted to temporarily hold coins of respectively decreasing size, each of said levers adapted to swing down when a coin of proper weight is temporarily supported thereby to discharge such coin through the clearance opening next above and manual means to discharge coins which are under-weight.

WALTER H. PARNELL.

COMMENTS ON THE VARIOUS PATENTS

It will be obvious from the reading of the various Letters Patent incorporated in the text, that much of the verbiage, spelling and sentence structure then used will seem strange to the usage in the currently accepted form. Where some of the spelling of the various words used in the Letters Patent came from is difficult to imagine. In several of the Letters Patent the word *DETECTER* is used in place of the normally accepted form of *DETECTOR*. As a matter of interest, old dictionaries in the possession of the authors going back to an 1818 edition of *A Critical Pronouncing Dictionary and Expositor of the English Language* by John Walker, Published in Philadelphia makes mention of only the word *DETECTOR*. Thus where the word *DETECTER* came to be used for *DETECTOR* is not known even though as noted earlier, *DETECTER* appears in the current dictionaries with a reference to *see DETECTOR*. Refer to II-2A-15.

In all of the Letters Patent there is a proliferation of hyphenated words that are not in standard usage in any of the 19th or 20th Century dictionaries available to the authors. In some of these Letters Patent, there is a constant reference to such items as *COIN-DETECTOR/DETECTOR*; *SCALE-BEAMS*; *LEVER-ARM*; and similar combinations of hyphenated words. The only logical conclusion would be that these words were made up by the inventors or possibly the Patent Attorneys of that era then in practice. The latter seems to be the more reasonable as much of the phraseology in one Letters Patent resembles other Letters Patent of that time.

Another point of interest is the reference in many of these Letters Patent that *Anyone skilled in the art* could reproduce them. In actual practice this would not be possible simply from the Letters Patent documents as no specific details were ever given as to the actual construction dimensions nor any specifics as to size of the counterweight, if used nor the exact location of the various parts of the invention from each other. Any one attempting to make one of these mechanical detectors would find that much trial and error work would be required before such a mechanism would function properly. It boggles the imagination to understand how the Patent Office would grant these Letters Patent in such a haphazard manner and with so little technical data to support them.

It is also interesting to note that a particular mechanism shown on the issued Letters Patent could be construed to be applicable in other non-described form without serious modifications to the original or in some cases totally unworkable as patented.

CHAPTER III

KNOWN DEVICES WITHOUT KNOWN PATENTS

SECTION 1

BACKGROUND

Among the many problems that confront anyone doing original research on coin scales and counterfeit coin detection mechanisms is the lack of documented information in that field of study, particularly when this is an esoteric subject. The original object of these devices was to be used in commerce, banking and trade and therefore little attention was paid to keep the literature that accompanied these devices. Thus, many such devices have no existing information concerning their use. To further complicate the matter is the fact that many of these devices had no patent date and or number on them. So that those that do possess them today have no means of tracing the date or origin of the device or knowledge that such a device might have been patented. In several cases, it has been found that the patent date on the coin scale or counterfeit coin detecting mechanism conforms to no record of such in the yearly Patent Office official records.

In this chapter, it is intended to list those coin scales and counterfeit coin detecting mechanisms that are currently known but for which no patent papers are thus far known. However, no book on the subject would be complete if it did not include coin scales of the American Colonial period. Equal arm balance scales with which to weigh coins then current in the Colonies, can be seen today in several American museums and in the hands of scale collectors. Such of these scales that exist have all been attributed to English manufacture having been exported for sale in the Colonies.

Another facet of American Coin scales of the equal arm balance type, is the scales of the period between 1792 and 1857. These scales had therein labels which indicated the acceptable weight and values in U. S. money for a number of foreign coins that were then current in the United States. The United States was unable to produce sufficient coins of its own during that period and thus had to rely on the foreign coins then available. The Congress, from time to time, established the value of these coins in United States money and these were then received at those values in both official and private transactions. In 1857, all foreign money was demonetized by an Act of Congress and the first American Counterfeit coin detector patent had been issued in 1853.

For those interested in the historic background of the use of foreign coins current during the period 1792 to 1857, a review of the Acts of the Second Congress, Session II, of February 9, 1793, Chapter V through the Acts of the Thirty-fourth Congress, Session III, February 21, 1857, Chapter LVI would be welcome reading.

SECTION 1

EQUAL ARM BALANCE SCALES (Colonial and Pre 1857 Period)

1: R. BILLINGS SCALE

Sold by R. Billings, Corn Hill, Boston, circa 1749

TYPE: Equal Arm Balance Scale

DESCRIPTION

BOX: Made up oak box of six pieces with the interior divided into three compartments. One to hold the equal arm scale, one for pennyweights and the other for grain weights. Box is $5 \frac{7}{8} \times 2 \frac{3}{4} \times 1$ inch and has a wire thru the lid hook that is engaged by a brass C-shaped catch. Hinges are of wire as are the fasteners of the pieces of the box to each other. Label inside the lid. Bottom of box covered in green velvet.

BEAM: Round tapered steel beam with swan neck ends. Very shallow brass pans, $2 \frac{1}{8}$ inches in diameter. Pans each have two concentric circles thereon. Set of six square, truncated, brass pennyweights, each marked with a "Lion Passant". The "Lion Passant" was the mark of the Goldsmiths Guild of London. Five grain weights also marked as the pennyweights.

LABEL: Indicates gold and silver coins of Europe with their weights and values in "Old Tenor", "Lawful Money", "Gold" and "Silver" equivalents in "Old Tenor". Old Tenor was a Colonial reference to Massachusetts paper money which was originally issued in 1690 to pay soldiers of Massachusetts who had fought in King Williams War.

This scale was made in England, circa 1749 and was sold in the colonies. (Reference No. 14, Sheppard & Musham).

Under the lid: A label of the weights and the values of fourteen foreign coins that were circulated in Colonial America. This engraved rectangular label is flanked by two partially draped Corinthian columns set on square bases. Upper part of the label has some scroll and ornamental floral work. The text of the label follows.

BILLINGS SCALE LABEL

| Coins | Weights & Value | | | Old Tenor | Lawful Money | Weights | | | Gold | | Silver | |
|-------------------------------------|--------------------|-----|-----|--------------|-----------------|---------|-----|------|------|-------|--------|---------|
| | Oz | dwt | gra | | | Oz | dwt | gras | Old | Tenor | Old | Tenor |
| A Guinea., | 5 | 9 | 10 | 10 0 | 28/ | 1 | 0 | | 38 | 0 0 | 2 | 10 0 |
| A Half Guinea., | 2 | 16½ | 5 | 5 0 | 14/ | | 10 | | 19 | 0 0 | 1 | 5 0 |
| A Moidore., | 6 | 22 | 13 | 10 0 | 36/ | | 5 | | 9 | 10 0 | | 12 6 |
| A 4 Pistole ^{es} | 17 | 8 | 33 | 0 0 | 88/ | | 4 | | 7 | 12 0 | | 10 0 |
| A 2 Pistole ^{es} | 8 | 16 | 16 | 10 0 | 44/ | | 3 | | 5 | 14 0 | | 7 6 |
| A 1 Pistole ^{es} , | 4 | 8 | 8 | 5 0 | 22/ | | 2 | | 3 | 16 0 | | 5 0 |
| 3-12 Ster ps or double Johannis, | 18 | 10 | 36 | 0 0 | 96/ | | 1 | | 1 | 18 0 | | 2 6 |
| A 36/-Ster.g ps | 9 | 5 | 18 | 0 0 | 48/ | | | 12 | | 19 0 | | 1 3 |
| A 18/-Ster.g ps | 4 | 14½ | 9 | 0 0 | 24/ | | | 6 | | 6 9 6 | | 6 7½ |
| A 9/-Ster. g ps | 2 | 7½ | 4 | 10 0 | 12/ | | | 3 | | 3 4 9 | | 9 3 3/4 |
| A Crown., | 19 | 8½ | 2 | 10 0 | 6/8 | | | 2 | | 0 3 2 | | 2 2½ |
| A Dollar | 17 | 12 | 2 | 5 | 6/ | | | 1 | | 0 1-7 | | 2 1¼ |
| A Half Dollar., | - 8 | 18 | 1 | 2 6 | 3/ | | | | | | | |
| A Quar Dollar., | - 4 | 9 | 0 | 11 3 | 1/6/ | | | | | | | |

NB 24 grains to pennywt. 20 pennywt 1 Oz.
Sold by- R. Billings, Corn Hill, Boston NE?

A similar pocket scale in a rectangular wood box made without weight compartments, but with identical tables on the label, carries the name of Lewis Deblois Golden Eagle dock (Boston) as seller and the name of Thomas Johnston of Boston as engraver of the label.

SECTION 1

EQUAL ARM BALANCE SCALES (Colonial and Pre-1857 Period)

EQUAL ARM COIN SCALES

2. UNKNOWN MAKER

CIRCA 1843

TYPE: Equal Arm Balance Scale

DESCRIPTION

BOX: Made up oak box of six pieces with the interior divided into three compartments. One to hold the equal arm balance scale, one for pennyweights and the other for grain weights. Box is $5 \frac{7}{8} \times 2 \frac{3}{4} \times 1$ inch and has a wire, through the lid islet type hook that is engaged by a brass "C-shaped" catch. Hinges are made of wire as are the fasteners of the wood pieces to each other that make up the compartments inside the box. Label inside of the cover.

BEAM: Rectangular, tapered, steel beam with swan neck ends. Slightly dished, brass pans, $2 \frac{1}{8}$ inches in diameter with three concentric circles on each pan. A complete set of pennyweights (1 to 6) with a partial set of grain weights. Each weight marked with a "Lion Passant" indicating English manufacture. "Lion Passant" was the hallmark of the Goldsmiths Guild of London.

LABEL: Indicated inside of the cover are the gold coins of the United States with their weights and values in dollars. Also gold and silver coins of Europe, Canada, South America and Turkey along with their weights and lawful value in United States money. The label reads as follows:

LEGAL TENDER OF GOLD AND SILVER COINS

| | |
|---|---------|
| American Eagles coined prior to July 31, 1834, 270 gr. is | \$10.66 |
| Half Eagle, 135 gr. is | 5.33 |
| Eagles coined since July, 1834 | 10.00 |
| Parts in proportion | |
| Doubloon, 17 dwt. 8 gr., is | 15.58 |
| Half Johnannes, 9 dwt., is | 8.53 |
| British Sovereign 5 dwt. $3 \frac{1}{2}$ gr., is | 4.87 |

LEGAL TENDER OF GOLD AND SILVER COINS

| | |
|---|-------------|
| French Napoleon, 4 dwt. 3 1/2 gr., is | 3.86 |
| Spanish Dollar, 17 dwt., 7 gr., is | 1.00 |
| Mexican Dollar, 17 dwt. 7 gr. is | 1.00 |
| Peruvian Dollar, 17 dwt. 7 gr., is | 1.00 |
| Chili Dollar, 17 dwt. 7 gr., is | 1.00 |
| Central American, 17 dwt. 7 gr., is | 1.00 |
| Florin of Southern German States, | .40 |
| Florin of Austrian Empire and City of Augsburg | .48 1/2 |
| Specie Dollar of Sweden and Norway, | 1.06 |
| Specie Dollar of Denmark | 1.05 |
| Thaler of Prussia & Northern States of Germany | .69 |
| Pound of Nova Scotia, New Brunswick, Newfoundland, and Canada | 4.00 |
| Lira of Lombardo Venitian Kingdom, and Tuscany | .16 |
| Franc of France and Belgium and Livre of Sardinia, | 18 6-10 cts |
| Ducat of Naples | .80 |
| Piastra of Turkey | 4 2-5 cts. |

Foreign Gold. - By Act of Congress, March 3, 1843, English Gold is legal tender at 94 cents, 6 mils, per dwt. French Gold, at 92 cents, 9 mils, per dwt. Spanish, Mexican and South American Gold, at 89 cents, 9 mils, per dwt..

EQUAL ARM COIN SCALES

SECTION 1:

3. WILLIAM POYNTELL - (Colonial Period) CIRCA: 1781

A scale box of the early Federal period contains a scale made by a Philadelphia scale maker, William Poyntell of Philadelphia. The Bank of North America is mentioned.

The reference to the Bank of North America on the label would indicate a date after 1781, the founding date of the bank.

William Poyntell was born in 1758 and died in 1811. He was listed in the Philadelphia Directory of 1785 as a book seller and stationer with a place of business on Second near Market Street. From 1805-1811 Poyntell was listed as a merchant in *The Arts and Crafts in Philadelphia, Maryland and South Carolina 1786-1800, Series Two*, and is referred to as a jeweler along with his many other activities.

(The data on William Poyntell is through the courtesy of Nicole H. Ketcham, of the Library Company of Philadelphia.)

LABEL ON WILLIAM POYNTELL SCALE BOX (Courtesy of Dr. Gerard M. M. Houben)

| | Sterling | | | Philad. | | | N. York. | | | Wt. |
|------------------------|----------|----|----|---------|----|----|----------|----|----|---------|
| | Y. | s. | d. | Y. | s. | d. | Y. | s. | d. | dw. gr. |
| ENGL Guineas, at | 1 | 1 | 0 | 1 | 15 | 0 | 1 | 17 | 0 | 5 6 |
| French ditto | 1 | 1 | 0 | 1 | 14 | 6 | 1 | 16 | 0 | 5 4 |
| Moidores | 2 | 1 | 7 | 0 | 5 | 0 | 2 | 8 | 0 | 6 16 |
| Johannes's | 3 | 12 | 0 | 6 | 0 | 0 | 6 | 8 | 0 | 18 0 |
| Half ditto | 1 | 16 | 0 | 3 | 0 | 0 | 3 | 4 | 0 | 9 0 |
| French milled Pistoles | 0 | 16 | 0 | 1 | 7 | 6 | 1 | 8 | 0 | 4 4 |
| Spanish ditto | 0 | 15 | 6 | 1 | 8 | 0 | 1 | 9 | 0 | 4 5 |
| Doubloons | 2 | 3 | 6 | 0 | 5 | 12 | 0 | 5 | 16 | 16 20 |
| English Crowns | 0 | 5 | 0 | 0 | 8 | 4 | 0 | 8 | 9 | 19 0 |
| French ditto | 0 | 5 | 0 | 0 | 8 | 4 | 0 | 8 | 6 | 19 0 |
| Spanish Dollars | 0 | 5 | 0 | 0 | 7 | 6 | 0 | 8 | 0 | 17 6 |
| English Six-pence | 0 | 0 | 6 | 0 | 10 | 0 | 0 | 10 | 0 | 10 1/2 |
| Eagle | | | | | | | | | | 11 6 |
| Half Eagle | | | | | | | | | | 5 15 |
| Quarter Eagle | | | | | | | | | | 2 19 |

All GOLD of equal fineness, with the Coins here mentioned, is taken at the Bank of North America, at 63 a Penny Weight.

EQUAL ARM BALANCE SCALES

SECTION 1

4: MAKER UNKNOWN

CIRCA: 1749

TYPE: Equal Arm Balance Scale

DESCRIPTION

BOX: Made up oak box of six pieces with the interior divided into three compartments. One to hold the equal arm scale, one for pennyweights and the other for grain weights. Box is $5 \frac{7}{8} \times 2 \frac{3}{4} \times 1$ inch and has a wire thru the lid hook that is engaged by a brass C-shaped catch. Hinges are of wire as are the fasteners of the pieces of the box to each other. Top of cover has two hearts incused with five lines. Label inside the lid. Bottom of box originally covered in green velvet.

BEAM: Round tapered steel beam with swan neck ends. Three incused lines on each side of the beam arms. Very shallow brass pans, 2 inches in diameter. Pans each have two, incused concentric circles thereon. Two square, truncated, brass pennyweights, each marked with a "Lion Passant". The "lion Passant" was the mark of the Goldsmiths Guild of London.

LABEL: Indicates gold and silver coins of Europe with their weights and values in "Old Tenor", "Lawful Money", "Gold" and "Silver" equivalents in "Old Tenor".

NOTE:

This scale was made in England, circa 1740 and was sold in the colonies. (Reference No. 14, *Sheppard & Musham*. Sheppard and Musham also noted that the design with two hearts was used by scale maker Mercy Meyotte, London.)

Under the lid: A label of the weights and the values of fourteen foreign coins that were circulated in Colonial America. A plain, rectangular label is divided into two sections of four (4) columns and the other section into three (3) columns with old script reading as later noted.

EQUAL ARM BALANCE SCALES

SECTION 1

4: MAKER UNKNOWN

CIRCA: 1749

TABLE of the Weights & value of Coins as they pafs in New England

| COINS | Weights | | Mass.OT | | | Lawf. M | | |
|-------------------|---------|-----|---------|----|----|---------|----|----|
| | dw. | gr. | l. | s. | d. | l. | s. | d. |
| A Guinea----- | 5 | 9 | 10 | 10 | 0 | 1 | 8 | 0 |
| Half Guinea----- | 2 | 16 | 5 | 5 | | 14 | | |
| Moidore----- | 6 | 22 | 13 | 10 | | 1 | 16 | |
| 4 Pistole piece-- | 17 | 8 | 33 | | | 4 | 8 | |
| 2 Pistole piece | 8 | 16 | 16 | 10 | | 2 | 4 | |
| 1 Pistole----- | 4 | 8 | 8 | 5 | | 1 | 2 | |
| Double Johannes-- | 18 | 10 | 36 | | | 4 | 16 | |
| Single Johannes-- | 9 | 5 | 18 | | | 2 | 8 | |
| Half Johannes--- | 4 | 14 | 9 | | | 1 | 4 | |
| Quarter Johannes- | 2 | 7 | 4 | 10 | | | 12 | |
| Crown Silver---- | 19 | 8 | 2 | 10 | . | | 6 | |
| Dollar----- | 17 | 12 | 2 | 5 | . | | 6 | |
| Half Dollar----- | 8 | 18 | 1 | 2 | | | 3 | |
| Quarter Dollar-- | 4 | 9 | | 11 | 3 | | 1 | 6 |

oz. dw. gr.

GOLD pr oz

SILVER pr oz

| | | | | | | | | |
|---|----|----|-----|----|---|----|----|-----|
| 1 | 0 | 0 | £38 | 0 | 0 | £2 | 10 | 0 |
| | 10 | | 19 | | | 1 | 2 | |
| | 5 | | 9 | 10 | | | 12 | 6 |
| | 2 | | 3 | 16 | | | 5 | |
| | 1 | | 1 | 18 | | | 2 | 6 |
| | | 12 | | 19 | | | 1 | 3 |
| | | 6 | | 9 | 6 | | 7 | 1/2 |
| | | 3 | | 4 | 9 | | 3 | 3/4 |
| | | 1 | | 1 | 7 | | 1 | 1/4 |

NB. 24 Grains is one penny^{wt}.

20 Penny^{wt} is one Ounce.

EQUAL ARM BALANCE SCALES

SECTION 1

4: MAKER UNKNOWN

Circa 1749

SCALE IN BOX

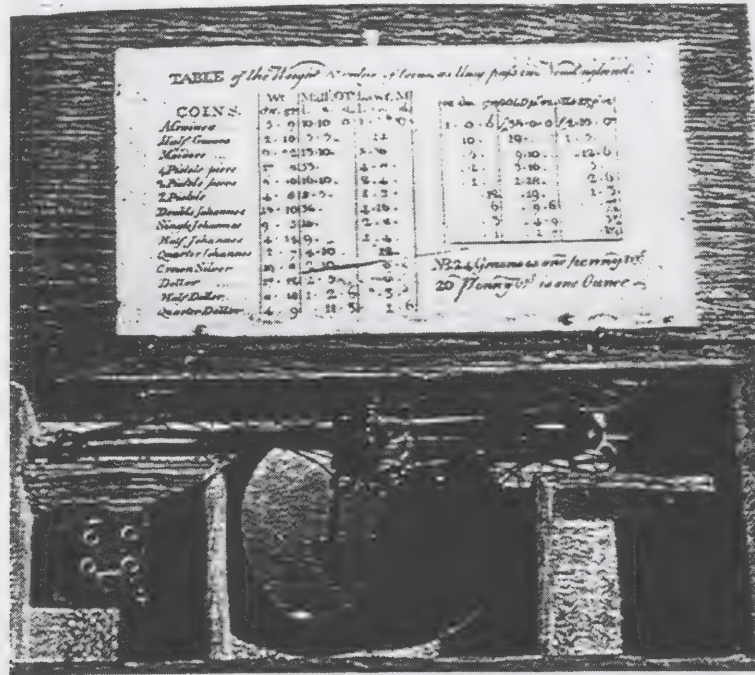


TABLE ON
UNDERSIDE OF THE LID

TABLE of the Weight & value of Coins, as they pass in New England.

| COINS. | wt. gr. | wt. oz. | wt. lb. | wt. ton | wt. cwt. | wt. qr. | wt. lb. | wt. ton | wt. cwt. | wt. qr. |
|-----------------|---------|---------|---------|---------|----------|---------|---------|---------|----------|---------|
| Almshouses | 5. 9 | 10. 10 | 0. 1 | 1. 7 | 0. 1 | 1. 0 | 8. 1 | 58. 0 | 0. 4 | 10. 0 |
| Half Grains | 2. 10 | 5. 5 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 |
| Moidores | 6. 2 | 13. 10 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 |
| Pistols piece | 17. 8 | 33 | 4. 8 | 4. 8 | 4. 8 | 4. 8 | 4. 8 | 4. 8 | 4. 8 | 4. 8 |
| 2 Pistols piece | 8. 16 | 16. 10 | 2. 4 | 2. 4 | 2. 4 | 2. 4 | 2. 4 | 2. 4 | 2. 4 | 2. 4 |
| 1 Pistol | 4. 8 | 8. 5 | 1. 2 | 1. 2 | 1. 2 | 1. 2 | 1. 2 | 1. 2 | 1. 2 | 1. 2 |
| Double Johannes | 18. 10 | 36 | 4. 16 | 4. 16 | 4. 16 | 4. 16 | 4. 16 | 4. 16 | 4. 16 | 4. 16 |
| Single Johannes | 9. 5 | 18 | 2. 8 | 2. 8 | 2. 8 | 2. 8 | 2. 8 | 2. 8 | 2. 8 | 2. 8 |
| Half Johannes | 4. 14 | 9. 5 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 | 1. 4 |
| Quarto Johannes | 2. 7 | 4. 10 | 0. 7 | 0. 7 | 0. 7 | 0. 7 | 0. 7 | 0. 7 | 0. 7 | 0. 7 |
| Crown Silver | 19. 8 | 2. 10 | 0. 2 | 0. 2 | 0. 2 | 0. 2 | 0. 2 | 0. 2 | 0. 2 | 0. 2 |
| Dollar | 17. 8 | 2. 5 | 0. 2 | 0. 2 | 0. 2 | 0. 2 | 0. 2 | 0. 2 | 0. 2 | 0. 2 |
| Half Dollar | 8. 12 | 1. 2. 6 | 0. 1 | 0. 1 | 0. 1 | 0. 1 | 0. 1 | 0. 1 | 0. 1 | 0. 1 |
| Quarter Dollar | 4. 9 | 11. 5 | 1. 6 | 1. 6 | 1. 6 | 1. 6 | 1. 6 | 1. 6 | 1. 6 | 1. 6 |

24 Grains is one penny wt.
20 Penny wt. is one Ounce

SECTION 1

EQUAL ARM BALANCE SCALES MADE IN COLONIAL AMERICA (Colonial and Pre 1857 Period)

5: JONATHAN DAKIN

Scales and Weights made and sold by Jon^A Dakin Boston N. E. Circa 1750.

TYPE: Equal Arm Balance Scale

A very revealing engraved label is found under the cover of a wooden box containing an American Colonial equal arm balance scale. Its last line reads *Scales & weights made and Sold by Jon Dakin Boston N E.* This may be the earliest indication of scales being manufactured in America and not imported. The primary text of the label is a Table of Weights and Values of circulating English, Portuguese and Spanish gold and silver coins as well as the value of gold and silver bullion by weight. The values of the coins are given in both *Old Tenor* and *Lawful Money*. The value of gold and silver bullion is given only in *Old Tenor*. The expression, *Old Tenor*, as a Massachusetts Bay Colony money definition came into use when serious inflation developed prior to 1737 causing an *Act of February 9, 1736-37* to be passed setting a rate of 3 *Old Tenor* shillings for 1 *New Tenor* shilling. When inflation continued, the *Act of January 15, 1741/42* set 4 *Old Tenor* shillings for 1 *Lawful Money* shilling (reviving the expression *Lawful Money* to avoid confusion with the different values of several *New Tenor* issues). After 1747 further inflation set in and caused the *Act of January 26, 1749/50*, effective March 31, 1750 to set the rate of $7\frac{1}{2}$ *Old Tenor* shillings for 1 *Lawful Money* shilling. All *Old Tenor* paper currency was to be redeemed by March 31, 1751 with coin the English Crown had sent. The values of the coins in *Old Tenor* and *Lawful Money* listed on the label of the scale box show the $7\frac{1}{2}$ to 1 ratio, dating the scale to the year 1750. The wooden box has rounded ends and its top is decorated with punched in sunbursts. The size of the box is 16.5 x 5.7 x 3 cm. ($6\frac{1}{2}$ x $2\frac{3}{4}$ x $1\frac{3}{16}$ inches). The scale itself has an iron beam with brass pans.

The label carries exactly the same text as the *R. BILLINGS Corn Hill, Boston* label described in this section.

The following table is a copy of the table shown on the underside of the wooden box cover.

LABEL UNDER THE COVER
OF THE DAKIN SCALE BOX

| Coins | Oz | Weights & Value | | Old Tenor | Lawful Money | Weights | | | Gold Old Tenor | Silver Old Tenor |
|-------------------------------------|----|--------------------|-----|---------------|-----------------|---------|-----|-----|-------------------|---------------------|
| | | dwt | grs | | | Oz | dwt | grs | | |
| A Guinea., | . | 5 | 9 | 10 | 10 0 28/ | 1 | . | . | 38 0 0 | 2 10 0 |
| A Half Guinea., | . | 2 | 16½ | 5 | 5. 14/ | . | 10 | . | 9 . . | 1 5 0 |
| A Moidore., | . | 6 | 22 | 13 | 10 36/ | . | 5 | . | 9 10 | . 12 6 |
| A 4 Pistole ^{ps} , | . | 17 | 8 | 33 | 88/ | . | 4 | . | 7 12 | . 10 0 |
| A 2 Pistole ^{ps} , | . | 8 | 16 | 18 | 10 44/ | . | 3 | . | 5 14 | 7 6 |
| A 1 Pistole ^{ps} , | . | 4 | 8 | 8 | 5 22/ | . | 2 | . | 3 16 | 5 0 |
| 3-12 Ster ps or double Johannis, | . | 18 | 10 | 36 | 96/ | . | 1 | . | 1 18 | 2 6 |
| A 36/-Ster. ^{9ps} , | . | 9 | 5 | 18 | . 48/ | . | . | . | 12 19 | 1 3 |
| A 18/-Ster. ^{9ps} , | . | 4 | 14½ | 9 | . 24/ | . | . | . | 6 9 | 6 7½ |
| A 9/-Ster. ^{9ps} , | . | 2 | 7½ | 4 | 10 12/ | . | . | . | 3 4 | 9 3 |
| A Crown., | . | 19 | 8½ | 2 | 10 6/8/ | . | . | . | 2 3 | 2 2½ |
| A Dollar | . | 17 | 12 | 2 | 5 6/ | . | . | . | 2 3 | 2 1¼ |
| A Half Dollar., | . | 8 | 18 | 1 | 2 6/ | . | 3/ | . | . | . |
| A Quar Dollar., | . | 4 | 9 | 11 | 3 1/6/ | . | . | . | . | . |

NB 24 grains to penny^{wt}. 20 penny^{wt} 1 Oz.

A

Scales & weights made & sold by JON DAKIN Boston, N.E.

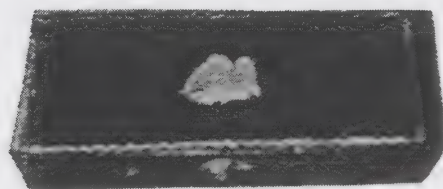
(for more see I-4-1, etc.)

SECTION 1

EQUAL ARM BALANCE SCALES (Post 1845 Period)

The California Gold Rush beginning in 1849 created an immediate demand for scales for miners and assayers. While some prospectors brought balances with them, the need was filled by the import of boxed scales and weights primarily from Europe. Cheap, easily transportable equal arm hand held balances were the most practical and desirable for gold dust and nuggets. The weights required were usually in grains, pennyweights and Troy ounces. Rectangular and oval boxes for the balance and weights were made of leather or tin plated metal decorated with an American eagle and/or lettered with an appropriate legend. The legend read:

MINER'S IMPROVED GOLD SCALE -
MANUFACTURED EXPRESSLY FOR CALIFORNIA
MINER'S COMPANION
(Courtesy of Donald Kagin)



The metal boxes came in various colors. They were about 7 inches in length and 3 to 4 inches in width in order to fit into one's pocket. The size of the pans governed the width. The pans were usually suspended by chain rather than cord.

The most elaborate scales for assayers, jewellers, bankers and merchants were non portable and required a table or counter for use. They were the same types as were made in Europe or American for substantial accuracy.

CHAPTER III

KNOWN DEVICES WITHOUT KNOWN PATENTS

SECTION 2

Many counterfeit coin detecting devices were introduced into the public domain without patented because they were ineligible for a patent. They also could have been made under a foreign patent and imported into the United States. Prior to 1885, products made abroad and imported into the United States did not require the name of the country of origin to be on the product.

A mechanical, counterfeit coin detecting device that falls into the *Known Devices Without Known Patents* is an example of this premiss.

1. INVENTOR: UNKNOWN BUT SIMILAR TO DEVICES MADE BY ALEX BERNSTEIN OF BERLIN, GERMANY. (Circa 1880)

TYPE: Rocker

DESCRIPTION

Nickel plated brass strip, five and three quarters (5 3/4) inches long and one and eleven sixteenths (1 11/16) inches wide end with a the short arm tapering to point at the end of the long arm. The short arm has two overlapping pans to receive fifty (0.50) cent and twenty five (0.25) cent pieces of the United States. There is a longitudinal slot in each pan to gauge the thickness and diameter of the respective coins. The long arm has attached thereto a movable counterweight which can be set and locked in place with a set screw. The counterweight is set to weigh both the U. S. fifty cent piece and the twenty five cent piece with the one setting. Steel knife edges in the beam are inserted into two posts that are part of the cast iron base. Originally this base was painted *barn red*.

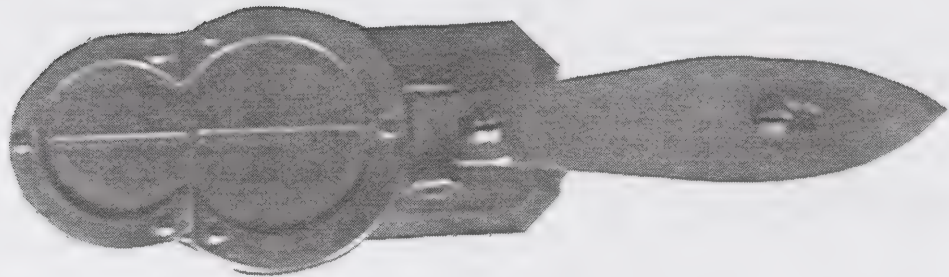
The late Michael A. Crawford, a recognized authority on metrology, surmised that this mechanism was either made by the German inventor Alex (Alexis) Bernstein of Berlin (who made a similar device to be used for the German gold coins) or the device could have been made in Germany and sent to the United States as an export. Bernstein came to the United States in 1880 and remained in Boston for several years making electrical inventions until he returned to Germany. The detector could have been made by him in the United States at that time or produced in the United States by someone else.

KNOWN DEVICES WITHOUT KNOWN PATENTS

SECTION 2

DETECTOR

(From the Mallis Collection)



HAND HELD BERNSTEIN DEVICE



KNOWN DEVICES WITHOUT PATENT
[CHP. III : SEC. 2
[III-2-2]

DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

2. MAKER: J. C. DELL, PHILADELPHIA CIRCA 1875

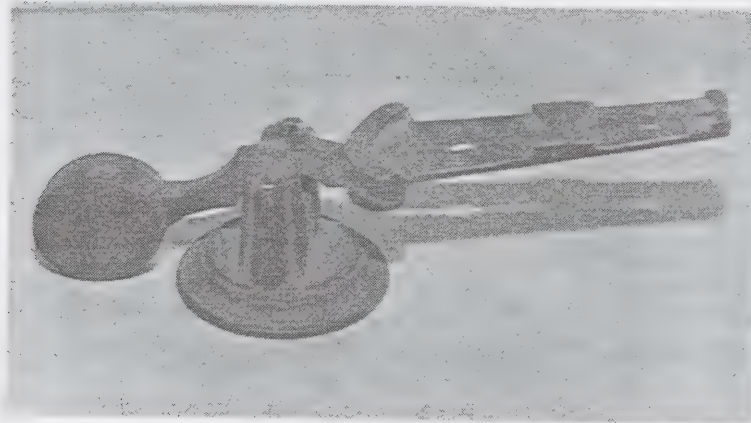
TYPE: rocker

DESCRIPTION

Cast brass rocker on a circular cast brass base. Overall length five (5) inches. Long arm is three and one quarter (3 1/4) inches long and has two circular pans cut with a trapezoidal shape from the fulcrum to the end. The two pans are for the U. S. fifty and twenty five cent coins. The diameter of the pans equals the coin diameter while the height of the pan edge designates the proper thickness. The short end has a vertical disk counterweight.

The device is marked "J. C. Dell Phila".

(Courtesy of William Doniger)



DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

3. DISTRIBUTOR:THEODORE M. MOORE

1834

TYPE: Rocker

DESCRIPTION

Cast brass rocker, eighty one (81) millimeters (3.22 inches) long with two circular, cutout pans on the long arm and a square brass counterweight cast integrally with the beam. Circular pans are for the half and the quarter eagle, U.S. gold coins and are marked respectively "1/2" and "1/4". Recessed diameters of the pans are about 0.5 mm larger than the coins struck in 1834-1839. There is a longitudinal slot gauge in each pan of the exact width of the coins to measure thickness.

This appears to be the earliest known device made specifically for detecting counterfeit United States coinage. The horizontal openings in which the coins fit are part of the beam and touch each other. Slot gauges for testing thickness are cut parallel to the beam and within the circular opening in which the coin is placed. The raised circumference of each opening is partially cut away on the outside so that the coin can be easily inserted and removed by hand. The size of the opening is for the newly enacted dimensions of the U. S. Classic Head gold coins under the Act of June 28, 1834. There were no other denomination gold coins minted during the 1834-1837 period. In 1838 a \$10 gold coin was added. The diameters of the \$5 and \$2½ gold coins were reduced in 1840.

The counterweight is a rectangular prism shaped as part of the beam. On top of the counterweight is punched *MOORE'S*. On the top of the horizontal portion of the base is punched *PATENT*. The device is similar in design to the early 19th century English brass rockers for testing sovereigns and half sovereigns. No U. S. Patent was issued for the Moore's device and apparently none was applied for as nothing in the Moore device appears novel or patentable. Moore's rocker is very rare.

The text of another label on the box of this rocker describes the detector as *Moore's Patent Eagle Balance* and ends with *For sale at the Offices of Moore's Price current, 12 Merchants Exch.* The use of the word *Eagle* is confusing because the eagle or U. S. \$10 gold coin was discontinued in 1804 and not minted again until 1838. The Moore tester has no opening for the *Eagle*, but only for the half and quarter eagles. Price current is confusing because a Wholesale Price Current was published once a week by the New York Journal of Commerce. The location of the Merchants

KNOWN DEVICES WITHOUT PATENT

[CHP. III : SEC. 2

[III-2-4]

MOORE'S ROCKER

Exchange was not given but the Merchants Exchange of New York was well known. Longworth's New York City directories from 1833 to 1840 lists John Moore as a brass founder at various addresses. The above noted address data turned out to be unrelated and deceiving.

There was a Moore's Philadelphia Price Current, Trade News and Shipping List, a Saturday publication by T. M. Moore of Philadelphia during the period 1832-1834 with an address at Merchant's Coffee House.

In the issue of November 8, 1834 the following advertisement has been located:

To Bankers, Merchants and Traders
MOORE'S PATENT EAGLE BALANCE
(Approved by the Mint and Used by most of the banks and Brokers)
To weigh and gauge Half and Quarter Eagles

Warranted Correct

Being so exact that no counterfeit of sufficient weight to turn the balance can possibly go through the Gauge For sale at the Office of Moore's, Price Current, No. 12 Merchants Exchange.

Retail Price \$1.50 or \$5 for four - to the trade a deduction of 25 percent upon retail price.

Any infringement of above will be dealt with legally.

Philadelphia Sept. 4, 1834

Having examined and made use of Mr. Moore's lever scale for the purpose of detecting counterfeit half and quarter eagles we unhesitatingly give it as our opinion that it is complete guard against fraud and imposition of that nature and recommend its general adoption to all traders and mechanics.

JOHN MAXWELL
Stock Exchange Broker, No. 38 south 3d st

HENRY BARKER
Exchange Broker, 10 south 3d st

Philadelphia being the only location at that time of a U. S. Mint, it was a natural source for the tester. In DeSilver's Philadelphia Directory for the year 1835-1836, Theodore Moore is listed as T. M. Moore, the publisher of Moore's Philadelphia Price Current. Thus the distributor of the tester is determined, but research for the manufacturer of the tester must continue.

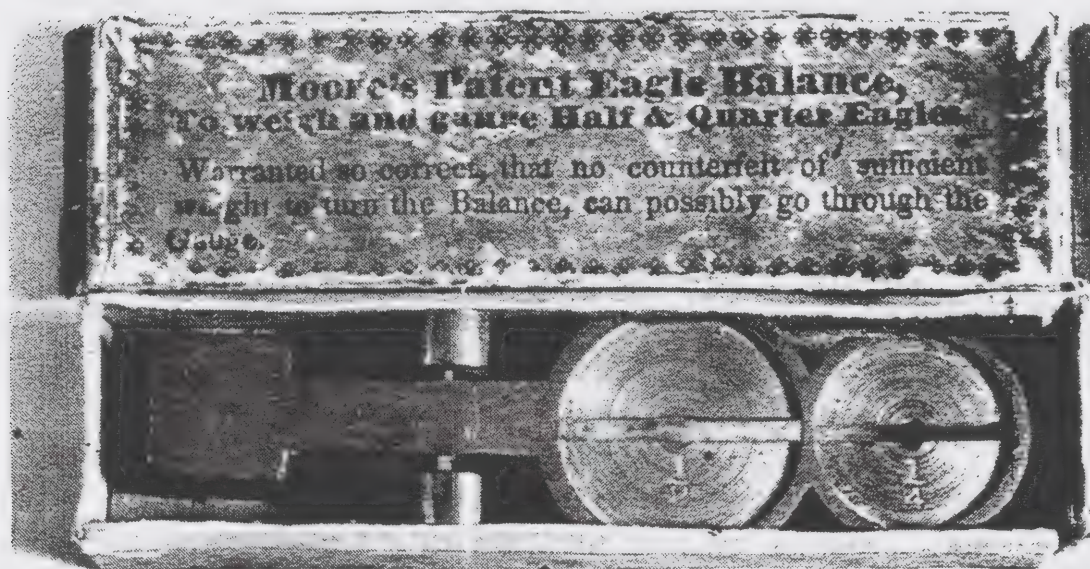
KNOWN DEVICES WITHOUT PATENT
[CHP. III : SEC. 2
[III-2-5]

MOORE'S ROCKER

BOX

Card board box with label on the upper side of the lid reads:
MOORE'S PATENT EAGLE BALANCE,
To weigh and gauge Half & Quarter Eagles
Warranted so correct, that no counterfeit of sufficient weight to
turn the Balance, can possibly go through the Gauge.

Oversize Illustration



Moore's Patent Eagle Balance counterfeit detector.

CHAPTER III

KNOWN DEVICES WITHOUT KNOWN PATENTS

COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

There are well known counterfeit coin detectors that incorporate a name and/or a date, while other have no identification on them. Some of these have been attributed to various makers such as Troemner and Myers of Philadelphia but there is no documentation to actually make this attribution a certainty.

The best known of the Non-Patented counterfeit coin detector is that of Charles F. Seymour, 442 W 46 St., New York. His detector is a *Rocker* type and is of cast brass. It is designed to check the diameter, thickness and weight of U. S. quarters and half dollars of the *Seated Liberty* type. The two pans for the coins on the longer arm are counterbalanced by an integral counterweight at the end of the short arm. A genuine coin will pass thru the slot in the appropriate pan, fit within the pan and tip the long arm down. An interesting item for this detector are the two bevelled, sliding pieces that fit into the vertical arm supports that carry the fulcrum. This allows the easy removal of the detector arm without any great difficulty, if needed. The photograph and the detailed drawing clearly indicate the major details and dimensions of the Seymour detector.

The second variety is that of a counterfeit coin detector of the exact design of the Seymour device attributed to Troemner/Myers. The only difference between the two is that the latter has only one bevelled sliding piece on one vertical arm and the fact that the base has a rounded rather than a square end. Which came first is still an item of conjecture although most collectors feel that the Troemner/Myers examples probably came first.

4. TYPE: ROCKER

CIRCA 1875

MAKER: CHAS. F. SEYMOUR, New York, N.Y.

DESCRIPTION

Cast brass rocker, four and three quarter (4 3/4) inches long with two, partially cut out, circular pans of proper coin size on the long arm and a square brass counterweight cast integrally with the beam. Pans are for the U. S. half and the quarter dollar are not so marked. There is a longitudinal slot in each pan of the exact width of the coins to measure thickness.

KNOWN DEVICES WITHOUT PATENT

[CHP. III : SEC. 2

[III-2-7]

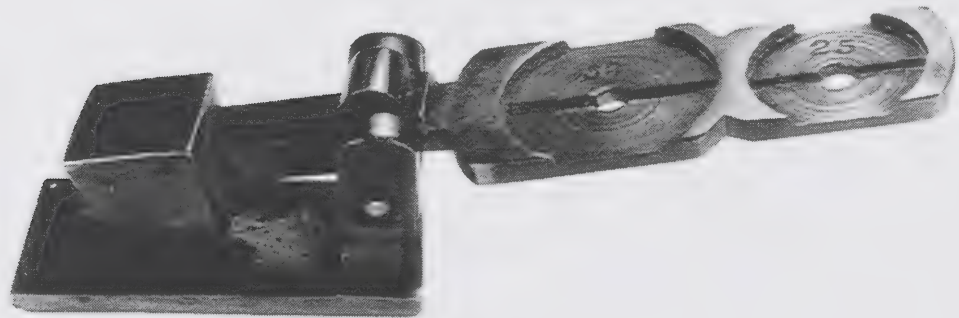
DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

The brass counterweight is marked:

CHAS. F. SEYMOUR"; 442 W 46 ST.; NY.

SEYMOUR DEVICE
(From the Mallis Collection)



There is an other version of this device that has only one sliding piece on the vertical arm to enclose the fulcrum. The sliding piece is full height, is not bevelled and has been forced in permanently.

DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS
SECTION 2

5. TYPE: ROCKER

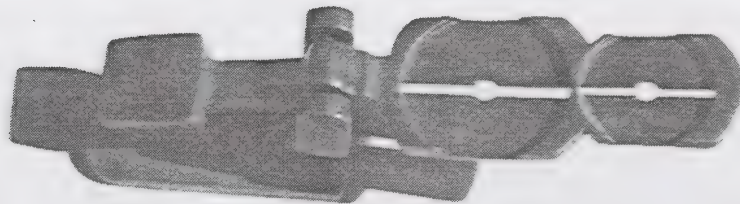
1875 or earlier

MAKER: Attributed to MEYERS/TROEMNER; PHILADELPHIA

DESCRIPTION

Cast brass rocker, four and three quarter (4 3/4) inches long with two circular pans on the long arm and a square brass counterweight cast integrally with the beam. partially cut out circular pans are for the U. S. half and the quarter dollar but are not marked as such. A pan diameter is the exact size of each of the two coins. There is a longitudinal slot in each pan of the exact width of the coins in question to measure thickness.

(From the Mallis Collection)



DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

6 TYPE: ROCKER

CIRCA 1875

MAKER: DAVEGA'S COIN TESTER

DESCRIPTION

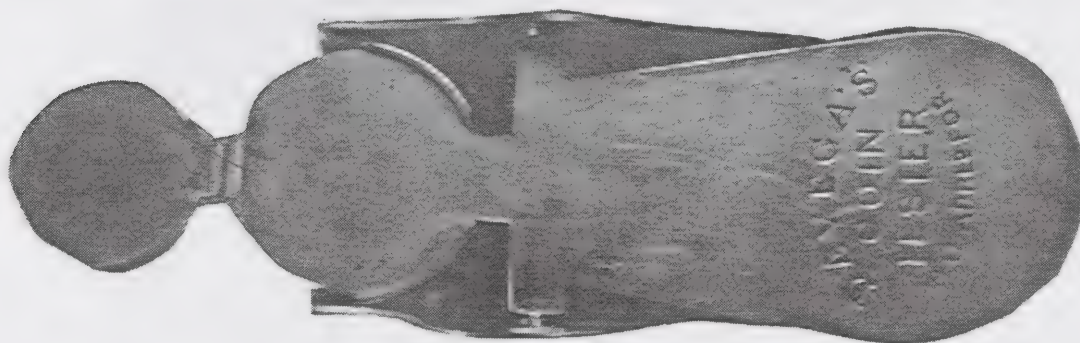
The device is five and one half (5 1/2) inches long, made of bent copper and with the lever arm nickel plated while the base is not. The short lever arm has two pans to weigh and gauge the U. S. fifty and twenty five cent coins. The longer lever arm acts as the counterweight.

The counterweight arm is marked:

DAVEGA'S COIN TESTER; PAT. APPLD FOR.

AUTHORS' COMMENT:

In this case also, extensive research of the Patent Office files fails to disclose that any patent was ever issued for this mechanism.



DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

7 TYPE: ROCKER

CIRCA 1870

MAKER: FAIRBANKS & EWING; PHILADELPHIA

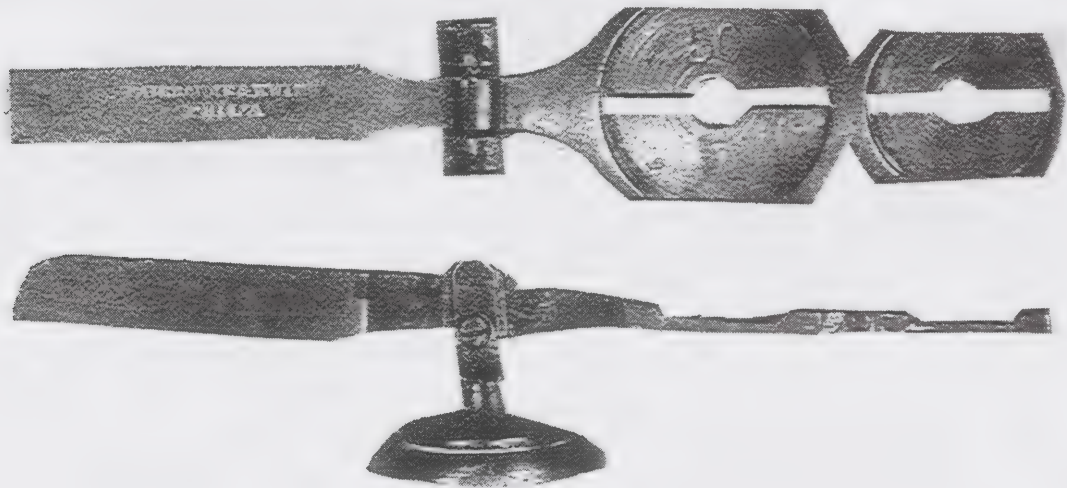
DESCRIPTION

Brass rocker, five and one half inches ($5\frac{1}{2}$ ") long with two circular pans on the long arm and a long, straight sided counterweight. The partially cut out, circular, coin pans are for the U. S. half and quarter dollar coins and are marked 50 and 25 respectively. The pan diameter is the exact size of the coin and a longitudinal slot in each pan of the exact width of the coin, and is used to measure the thickness of the coin. Round, $1\frac{7}{8}$ " diameter brass base, bevelled and waisted; $1\frac{3}{8}$ " high, terminating in a "U" shaped support for the beam fulcrum. Fulcrum bearings covered with a plate and set screw into the support arms.

The Fairbanks & Ewing partnership operated in Philadelphia from 1856 to 1879, first at 225 Market Street and later at 715 Chestnut Street.

NOTE:

The information and illustration of this device was furnished by Betty Wright from her collection and is used herein with her kind permission.



DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

8. MAKER: UNKNOWN

CIRCA 1875

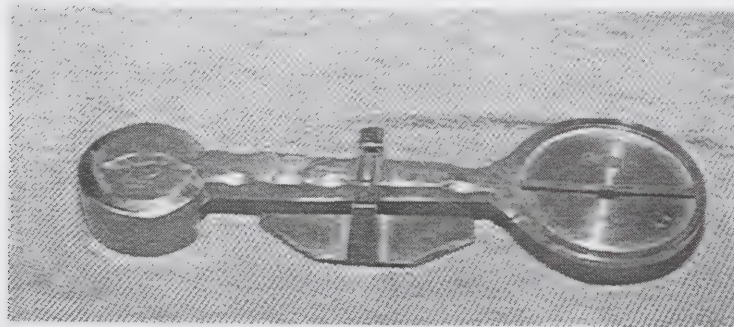
TYPE: ROCKER

DESCRIPTION

Cast brass rocker on a circular cast brass. Overall length four and three quarters (4 3/4) inches. Long arm is two and three quarters (2 3/4) inches long and has a single, circular pan with a longitudinal slot. The pan is to weigh the twenty dollar gold coin and is marked 20 DOL. The circular depression in the pan measures the coin diameter while the width of the slot measures the proper thickness. The short end has a cast in place, brass counterweight and is stamped with an eagle with spread wings.

There is no maker's name on the device and no record of this device has thus far been found in the U. S. Patent Office.

(Courtesy of William Doniger)



DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

9. MAKER: MEYERS & CO. PHILADELPHIA CIRCA 1850

TYPE: ROCKER

DESCRIPTION

Cast brass rocker, 127 MM (5") long, with five, circular pans on three lever arms utilizing two fulcrums, the secondary set slightly above the primary fulcrum. The sides of each pan have been cut off. Each pan has a longitudinal slot down the middle and the width of each slot varies with the size of the coin to be measured. The five slots are each marked 20D; 10D; 5D; $2\frac{1}{2}$ D; 1D. The $\$2\frac{1}{2}$ dollar pan has a step in it to accept the quarter eagles of 1834-1837 plus those issued later. The one dollar pan can only accept the 13 MM coins of 1849-1853 period. The top of the square, cast brass counterweight is marked MEYERS & CO. PHILAD in two lines.

The feature of the device is its singular design. To weigh the U. S. \$1 or $\$2\frac{1}{2}$ gold coin, the lever with the appropriate pans, is kept on the side opposite the counterweight; e.g.; all three pan levers are one side. To weigh the \$5 gold coin, the \$1 and $\$2\frac{1}{2}$ pan lever is turned over onto the counterweight side, thus becoming part of the counterweight system. For the \$10 and \$20 gold coins, both the \$1 and \$2.50 lever and the \$5 lever are turned over to the counterweight side. The ability to make use of more than one lever arm to become part of the counterweight system is unique in the design of U. S. counterfeit coin detectors.

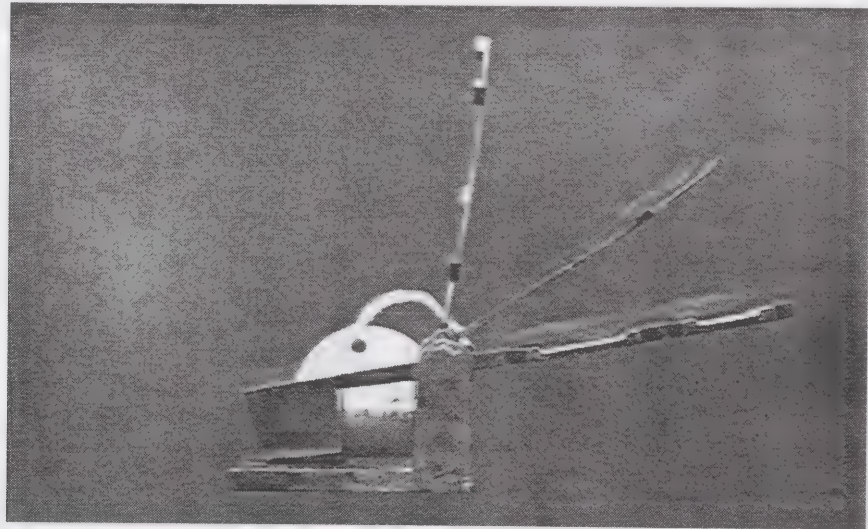
Frederick Myers also referred to as Myer, Meyer and Meyers of Philadelphia had created a device basically having one fulcrum supporting one lever or beam which beam had a fixed weight on one end and only two coin holders on the other. However, attached to the top of that beam, almost directly over the fulcrum, there were two vertical semi-circular bearings holding a horizontal hinge pin within them. Swinging on the hinge pin through an arc of 180 degrees were one or two arms with one or two additional coin holders on one surface of each such arm. Such an arm was designed to be turned by hand on the hinge pin to one of two positions, the arm resting on the top of one side of the beam or the other.

DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

9. MAKER: MEYERS & CO. PHILADELPHIA CIRCA 1850

(Showing All Three Arms in Raised Position)



(All Three Arms Opposite the Counterweight)

DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

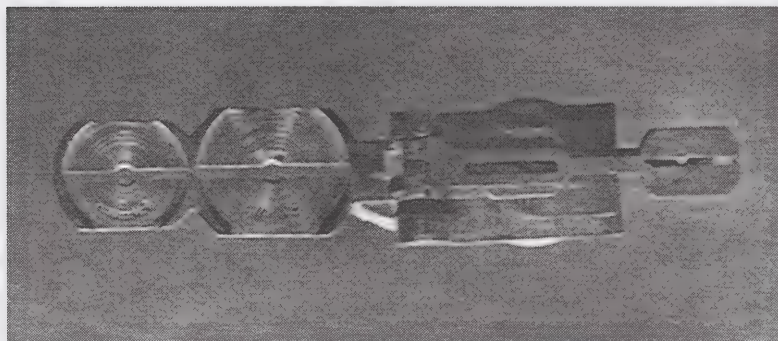
SECTION 2

9. MAKER: MEYERS & CO. PHILADELPHIA CIRCA 1850

(Two Arms Opposite the Counterweight)



(Two Arms On the Counterweight Side)

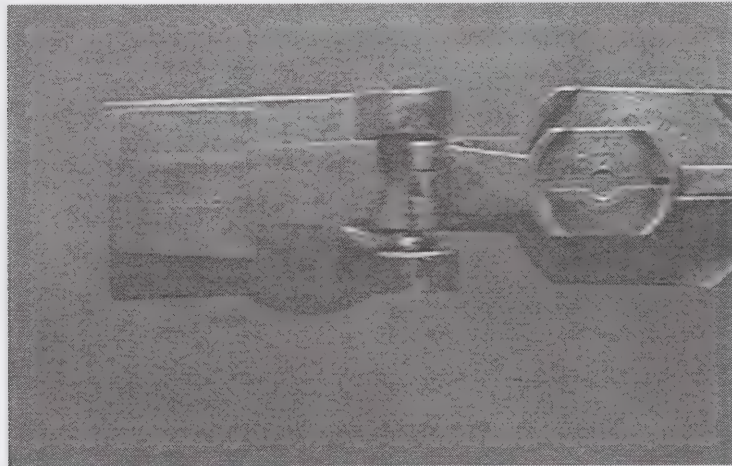


DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

9. MAKER: MEYERS & CO. PHILADELPHIA CIRCA 1850

(Markings on the Counterweight)



DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

10. MAKER: K & G HOWARD PHIL CIRCA 1850

TYPE: ROCKER

DESCRIPTION

Cast brass rocker on a six sided, cast brass base. Overall length six and one half ($6\frac{1}{2}$) inches (166 mm.) Long arm is four and one half ($4\frac{1}{2}$) inches (113 mm.) and has three circular pans with cut off edges and with a longitudinal slot in each. The pans to weigh the U. S. five, two and one half and one dollar gold coins of the era, 1849-1854. The circular depression in each pan measures the coin diameter while the width of the slot measures the proper thickness. The short end has a cast in place, brass counterweight and is stamped with *K & G HOWARD PHIL*. Near the end of the long arm is the word *WARRANTED*.

DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

10. MAKER: TROEMNER; PHIL

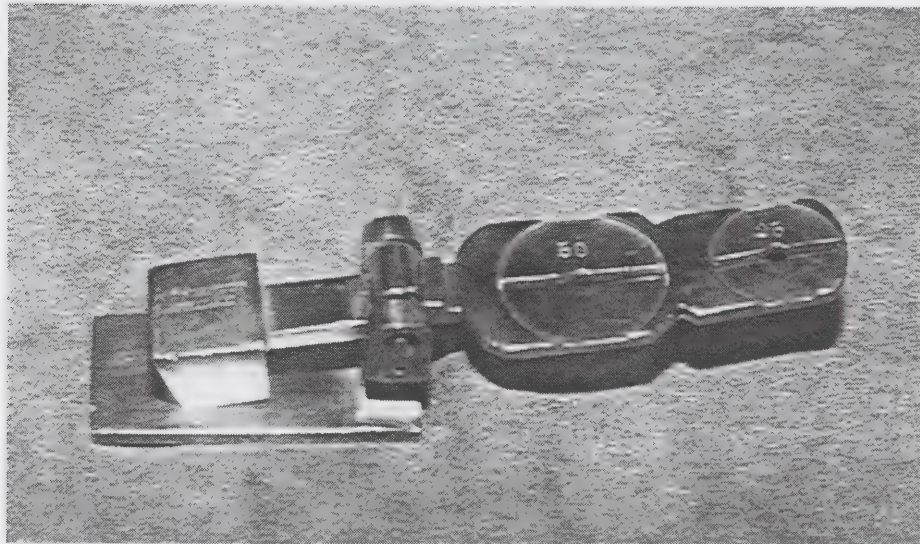
CIRCA 1850

TYPE: ROCKER

DESCRIPTION

Cast brass rocker with a square end rectangular cast brass base with integral uprights to support the scale. Overall length five and one quarter ($5\frac{1}{4}$) inches (135 mm). Long arm is four and one half ($4\frac{1}{2}$) inches (113 mm) and has two circular pans with cut off edges and with a longitudinal slot in each. The pans are to weigh U. S. silver twenty five and fifty cent coins. The circular depression in each pan measures the coin diameter while the width of the slot measures the proper thickness. The short end has a cast in place, brass counterweight approximately three quarter ($\frac{3}{4}$) inches square (21 mm) and five eights ($\frac{5}{8}$) inches deep (19 mm). Marked on top of the counterweight *TROEMNER PHILAD.*

(From the Collection of William Doniger)



DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS

COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

TYPE GAUGE ONLY & PERPETUAL CALENDER

CIRCA 1900

11. MAKER: UNKNOWN

DESCRIPTION

Nickel plated, brass device, approximately one and one half (1 1/2) inches wide by and one inch (1) long, with a series of three slots to gauge the U. S. dime, quarter dollar and half dollar. The size of the slots to determine the diameter and thickness of each coin. No evidence of the ability to weigh the coin.

A perpetual calender is also incorporated in a roller attached to the device.



DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS

COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

TYPE: MISCELLANEOUS

CIRCA 1900's

12. MAKER: STAR PUBLISHING CO., CHICAGO

DESCRIPTION

Circular metal disk, two (2) inches in diameter. It also has six (6) slots to gauge U. S. 25 & 50 cent and one dollar silver coins in addition to 5, 10 and 20 dollar gold coins. There is no ability to check the weight of the coins.

THE PERIPHERY OF THE FACE OF THE DISK HAS THE WORDS:

MFG. BY STAR PUB. CO. CHICAGO.

:COIN TEST AND TEN ARTICLE COMBINATION



DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

12. MAKER: C. H. CROOK, NEW YORK CIRCA 1875

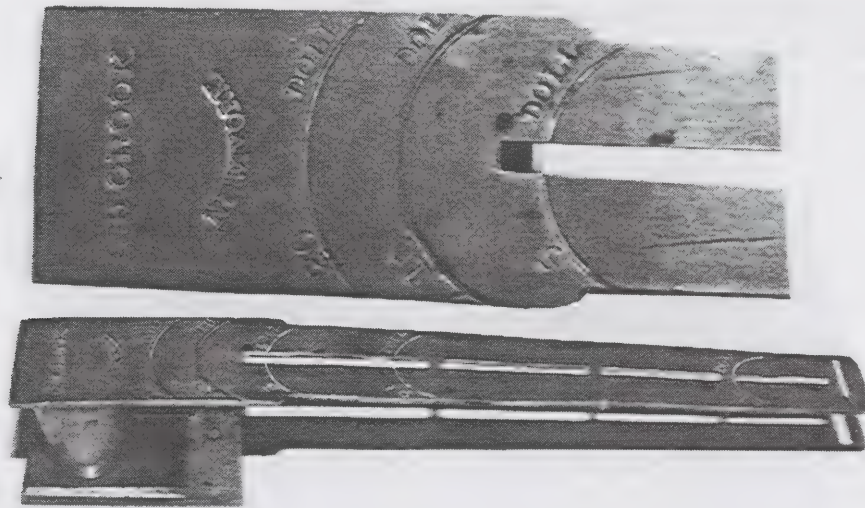
TYPE: rocker

DESCRIPTION

Cast brass rocker on a circular cast brass base. Overall length six and one quarter inches ($6\frac{1}{4}$). Long arm is five and one half inches long ($5\frac{1}{2}$) and has five semi circular pans and longitudinal slots cut along the long arm. The arm is trapezoidal in shape from the fulcrum to the end. The five pans and slots are for weighing and gauging U. S. \$20, \$10, \$5, $2\frac{1}{2}$ and \$1. The diameter and width of the slots equals the coin diameter while the thickness is measured by the width of the slot. The short end has a vertical counterweight.

The device is marked C. H. CROOK; New York.

(Courtesy of William Doniger)



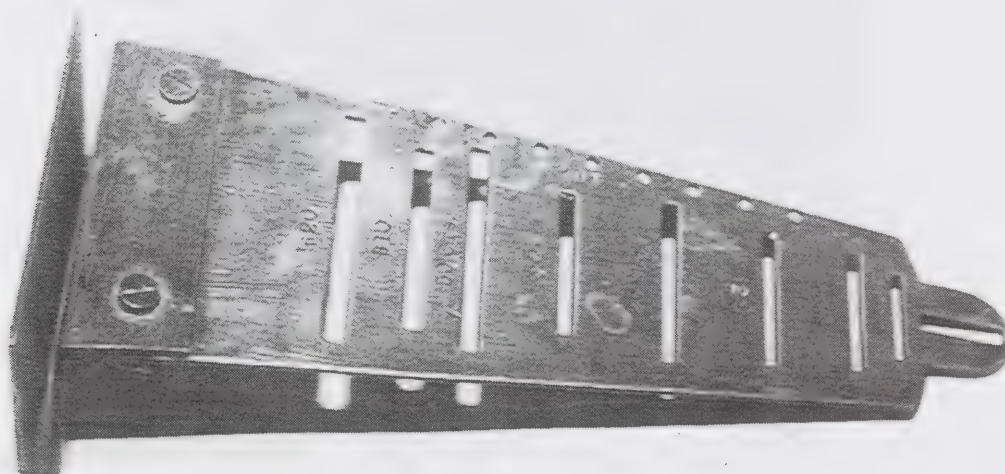
DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2

13. MAKER: J.H. BURNET/No. 61 WALL ST./NEW YORK
Circa 1875

DESCRIPTION:

Cast brass rocker for testing coins and weighing letters. Overall length 4 3/4 inches. The arm is attached by two screws to a vertical U-shaped letter slot. The arm narrows toward its extremity and contains openings to insert gold and silver U.S. coins vertically, the order being \$20, \$10, 50¢, \$5, 25¢, \$3, \$2.50, and \$1 gold. There is an additional slot in the arm parallel to its length for a 10¢ piece to be inserted as a counterweight when a \$1 gold is being tested. The arm also contains 8 small holes an equal distance apart so that a pin or wire hanger can be inserted to balance a letter in the letter slot, weighing letters at 1/4 ounce gradients from 1/4 oz. to 2 oz. Since no slot for the \$1 in silver exists, the rocker was made prior to 1878. The fulcrum on which the arm rests and the base which holds the fulcrum has not been located.



(Courtesy of William Doniger)

DESCRIPTION OF KNOWN DEVICES
WITHOUT KNOWN PATENTS
COUNTERFEIT COIN DETECTING MECHANISMS

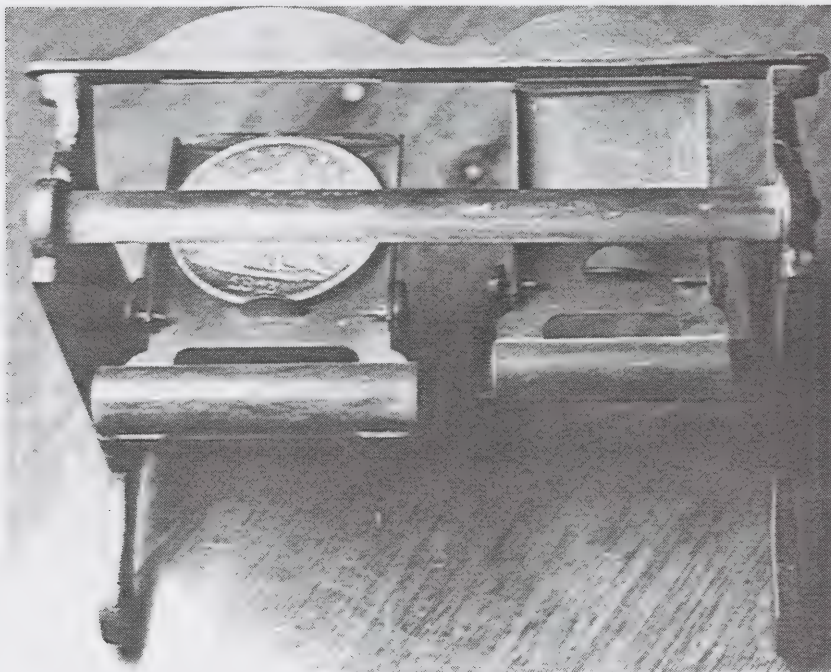
13. MAKER: POWELL BROS., New York, NY (Circa 1875)

TYPE: DOUBLE ROCKER

DESCRIPTION:

A testor for U.S. 25¢ and 50¢ coins designed and constructed to allow genuine coins to slide off a swinging holder while counterfeit coins will not. The holder for each coin denomination is separately mounted on two small horizontal pins supported by a metal frame. Each holder in its normal position is tipped upward at about a 30 degree angle by a horizontal cylindrical counterweight on one side of its pivots and the other end of the holder presses against the underside of a cross bar. The crossbar has horizontal thickness and diameter guaging openings through which coins are inserted onto the swinging holder. Such holder has raised side lips to guide the coins when they are slid in. As a coin slides downward along the top face of the holder, the coin reaches a raised stop on the holder. In that position a coin of adequate weight will sufficiently depress the holder on its pivots and the coin will fall out of the holder in the direction opposite to the direction in which the coin was inserted. If the coin is of inadequate weight it will not depress the swinging holder beyond a horizontal position and the coin will remain on the top face of the holder.

The overall dimensions of the device are 4 inches in width, 2 3/4 inches in depth and 2 1/2 inches in height. The side supports of the frame are ornamented cast iron. The other elements are made of blackened brass. The four spread legs give the detector substantial stability. Only one example is known.



Across the top of the top horizontal
brace there is punched:
PAT. APPL-D FOR
POWELL BROS. N.Y. 234 W. 29.

CHAPTER IV:

DESCRIPTION OF KNOWN COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 1

In the following pages, the models are arranged in the groupings in which they were actually issued rather than in the Patent Paper Groupings in Chapter II. Thus Maranville's device for Patent No. 203,057 while patented as a combination postal scale and detector is placed in Counterfeit Coin Detectors.

The matter of the John Allender counterfeit coin detector patent and its associated problems are herein covered in great detail so that the matters and reasons behind the confusion can be cleared. The following background will make clear the problems between Allender and the Patent Office with respect to his patent application and final award.

JOHN ALLENDER PATENT

John Allender of New London, Connecticut made seven varieties of Counterfeit Coin Detectors as listed hereafter. The dates of manufacture are based upon design elements and legends, the label text, the patent records and the coinage types and dates.

A. MADE IN 1850

Five slotted countersunk coin holders. Beam punched with word *WARRANTED*. Dollar holder has one diameter size. No other data known. Mentioned in letter dated January 10, 1855 from James Ross Snowden, Director of the U.S. Mint, to C. Mason, Commissioner of Patents, and purchased by the U.S. Mint about 1851 in Philadelphia where it was said to be available at several local stationary shops. Coin holder pans have values in Arabic numbers and "DOL".

B. MADE IN 1850

Five slotted countersunk coin holders. Dollar holder has one diameter size. Type II, larger size \$1 coin not introduced until 1854. *DOL.* on each coin holder is the only other punched text. Sometimes, perhaps boxed.

C. MADE IN 1850

Five slotted countersunk coin holders. Dollar holder for only one diameter size. Punched Arabic numbers and letters designate denominations. Other punched text is *U.S. GOLD BALANCE* plus *DOL.* on each coin holder. Perhaps boxed.

BACKGROUND ON JOHN ALLENDER DETECTORS

SECTION 1 - ALLENDER PATENT

D. MADE IN 1851, 1852 & 1853

Five slotted countersunk coin holders. Dollar holder has one diameter size. Lettering used instead of numerals in denominations. Other punched text is *J. ALLENDER PATENT PENDING* plus *DOL.* on each coin holder. Taper shaped cardboard box with inside label text mentioning separate counterweight and *I. Wilson of New London* as maker. The name of *D.S. RUDDOCK* as label printer is included on some labels.

E. MADE IN 1853 & 1854

Five slotted countersunk coin holders. Dollar holder has two diameter sizes. Lettering used instead of numerals in denominations. Other punched text is *J. ALLENDER PATENT PENDING* plus *DOL.* on each coin holder. Taper shaped cardboard box with text on inside label.

I. No separate \$3 bushing for insertion into \$5 coin holder.

II. With separate \$3 bushing for insertion into \$5 coin holder.
Made in 1854 when larger size \$1 coin was introduced.

F. MADE IN 1854 & 1855

Six slotted countersunk coin holders with (three offset laterally). Dollar holder has two countersunk diameter sizes. Lettering used instead of numerals in denominations. Other punched text is *J. ALLENDER PATENT PENDING* plus *DOL.* on each coin holder. Oval shaped cardboard box with text on inside label.

G. MADE FOR SEVERAL YEARS AFTER NOVEMBER 27, 1855

Six slotted countersunk coin holders (three are offset laterally). Dollar holder has two countersunk diameter sizes. Lettering used instead of numerals in denominations. Other punched text is *JOHN ALLENDER PATENT NOV. 27, 1855* plus *DOL.* on each coin holder. Label text on inside of oval or rectangular shaped cardboard box mentions separate counterweight. Label in rectangular box is on buff or blue paper and also contains the patent date and an illustration of the detector.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS
ALLENDER DETECTORS

A. MADE IN 1850:

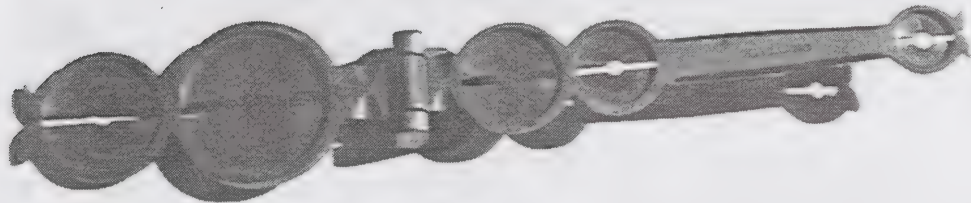
Patent Pending Model: 1850; Marked *WARRANTED* and with *NUMERAL DESIGNATED DENOMINATIONS; DOL.* in each holder.

TYPE: Rocker

DESCRIPTION

Polished cast brass, unequal arm beam, eight and one half (8 1/2) inches (21.6 cm.) long with two horn finials at each end. Steel knife edge in beam inserted in a cast brass base with cast in place posts that are the bearing points of the beam. Five round pans in all. Pans for the \$20 and \$10 dollar on one side and the \$5, \$2.50 and \$1 on the other. Slots in each pan to check diameter and thickness of the coin. The short end acts as the counterweight for gold coins smaller denominations while the longer arm, with a round supplemental weight at the end of the long arm, is the counterweight for the two larger gold coins. Cast into the long arm: *WARRANTED*.

1850 MODEL
(Entire Device)



ALLENDER PATENT
[CHP. IV : SEC. 1]
[IV-1-3]

COUNTERFEIT COIN DETECTING MECHANISMS

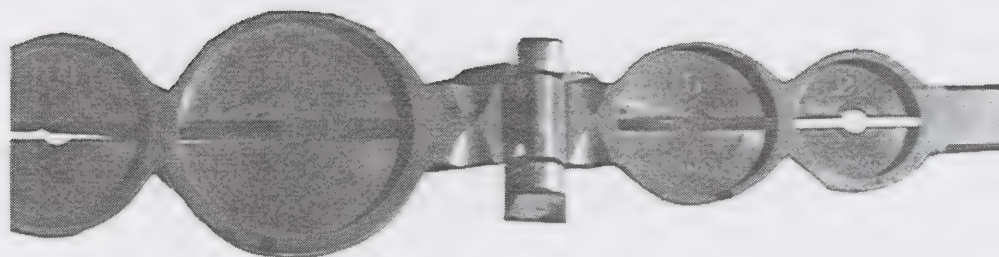
ALLENDER DETECTORS

A. MADE IN 1850: - continued

1850 MODEL
(End Marked *WARRANTED*)



1850 MODEL
(Pans Marked With *NUMERALS & DOL*)



ALLENDER PATENT
[CHP. IV : SEC. 1]
[IV-1-4]

COUNTERFEIT COIN DETECTING MECHANISMS

ALLENDER DETECTORS

C. MADE IN 1850:

Patent Pending Model: 1850; Marked *U. S. GOLD BALANCE* and with *NUMERAL DESIGNATED DENOMINATIONS; DOL* in each holder.

TYPE: Rocker

DESCRIPTION

Polished cast brass, unequal arm beam, eight and one half ($8\frac{1}{2}$) inches (21.6 cm.) long with two horn finials at each end. Steel knife edge in beam inserted in a cast brass base with cast in place posts that are the bearing points of the beam. Five round pans in all. Pans for the \$20 and \$10 dollar on one side and the \$5, \$2.50 and \$1 on the other. Slots in each pan to check diameter and thickness of the coin. The short end acts as the counterweight for gold coins smaller denominations while the longer arm, with a round supplemental weight at the end of the long arm, is the counterweight for the two larger gold coins. Cast into the long arm: *U. S. GOLD BALANCE*.

1850 MODEL:
U. S. GOLD BALANCE



COUNTERFEIT COIN DETECTING MECHANISMS
ALLENDER DETECTORS

D. MADE IN 1851, 1852 & 1853

Patent Pending Model: 1851-1853; Marked *J. ALLENDER PATENT PENDING* and with *LETTER DENOMINATIONS; DOL.* in each holder.

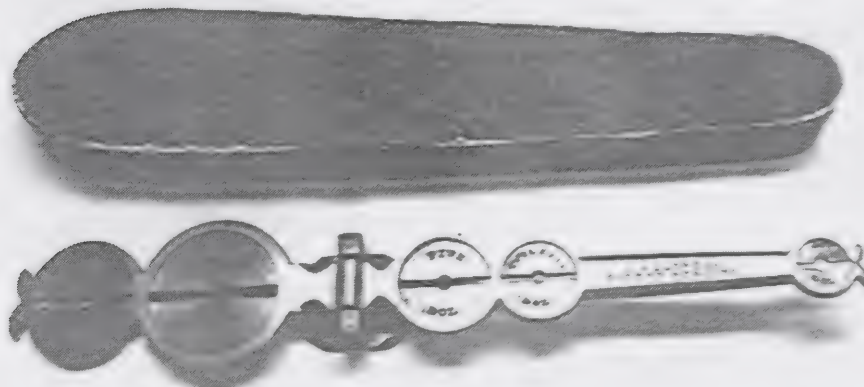
TYPE: Rocker

DESCRIPTION

Polished cast brass, unequal arm beam, eight and one half ($8\frac{1}{2}$) inches (21.6 cm.) long with two horn finials at each end. Steel knife edge in beam inserted in a cast brass base with cast in place posts that are the bearing points of the beam. Five round pans in all. Pans for the \$20 and \$10 dollar on one side and the \$5, \$2 $\frac{1}{2}$ and \$1 on the other. Slots in each pan to check diameter and thickness of the coin. The short end acts as the counterweight for gold coins smaller denominations while the longer arm, with a round supplemental weight at the end of the long arm, is the counterweight for the two larger gold coins. Cast into the long arm: *J. ALLENDER PATENT PENDING* plus *DOL.* Denomination designation in letters. Tapered, oval cardboard box covered in green paper. Label inside of box mentions separate counterweight.

I. WILSON of New London, is noted as the maker and on some labels *D. S. RUDDOCK* is noted as the label printer. NOTE: other shaped boxes are also known with this model.

PHOTOGRAPH: 1851-1853 MODEL
(*ALLENDER PATENT PENDING*
with *DOL* in Each Pan (In OVAL Type Box)



ALLENDER PATENT
[CHP. IV : SEC. 1]
[IV-1-6]

COUNTERFEIT COIN DETECTING MECHANISMS

ALLENDER DETECTORS

D. MADE IN 1851, 1852 & 1853

Patent Pending Model: 1851-1853; Marked *J. ALLENDER PATENT PENDING* and with LETTER DENOMINATIONS; DOL. in each holder. - continued

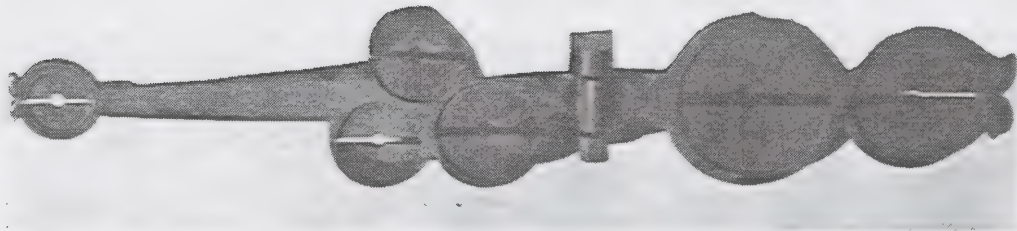
While the photograph shows an Oval type box, it is known that this counterfeit coin detector can be found in other shaped boxes and often with a label inside of the box indicating I. WILSON or some other, as the maker.

COUNTERFEIT COIN DETECTING MECHANISMS

ALLENDER DETECTORS

E. Patent Pending Model: 1854 & 1855

1854 & 1855 MODEL
(Entire Device)



ARM WITH J. ALLENDER PATENT PENDING
(Note that the \$1 pan shows the depression
for both of the \$1 coins then current)



ALLENDER PATENT
[CHP. IV : SEC. 1]
[IV-1-8]

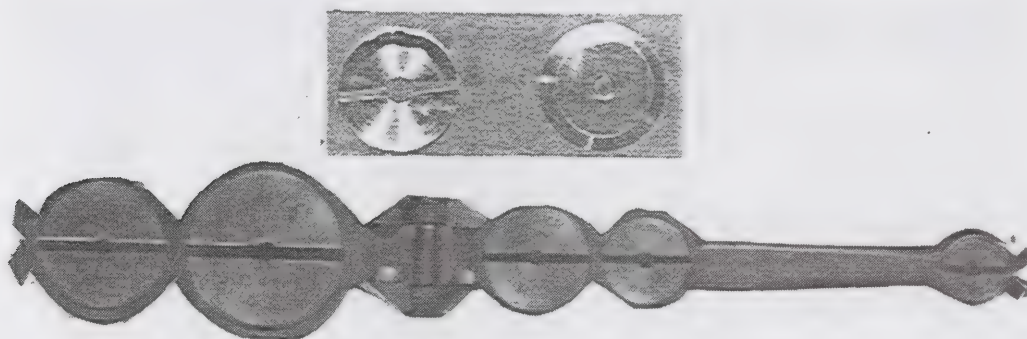
COUNTERFEIT COIN DETECTING MECHANISMS

ALLENDER DETECTORS

E. Patent Pending Model: 1854 & 1855

1854 & 1855 MODEL
(Supplemental Weight and \$3 Insert)
(Shown Above Detector)

This is an extremely rare, complete example of the J. Allender patent pending detector with the supplemental counterweight and the three dollar insert. The two loose pieces are very difficult to find intact with the original detector as these were more often than not lost through the years.



F. Patented Model; November 27, 1855

TYPE: Rocker

DESCRIPTION

Polished cast brass, unequal arm beam, eight and one half (8 1/2) inches long (21.6 cm.) with two horn finials at each end. Steel knife edges in beam inserted in a cast brass base with cast in place posts that are the bearing points of the beam. Round pans on the beam with slots in each pan made to weigh twenty, ten, five, three, two and one half and one dollar gold coins. Diameter of each pan and its slot used to check diameter and thickness of the coin. The short end acts as the counterweight for gold coins of one dollar (\$1.00), two and one half (\$2 1/2) dollars, three (\$3.00) dollars and five (\$5.00) dollar denominations. The short end has identical shaped pans and slots to weigh the ten (\$10.00) dollar and twenty (\$20.00) dollar denominations using the long arm with a round supplemental weight at the end of the long arm, as the counterweight for the two larger coins. Cast in long arm: *JOHN ALLENDER PATENT NOV. 27, 1855.*

BOX

Rectangular, or Oval, cardboard box covered with green paper with

ALLENDER PATENT
[CHP. IV : SEC. 1]
[IV-1-9]

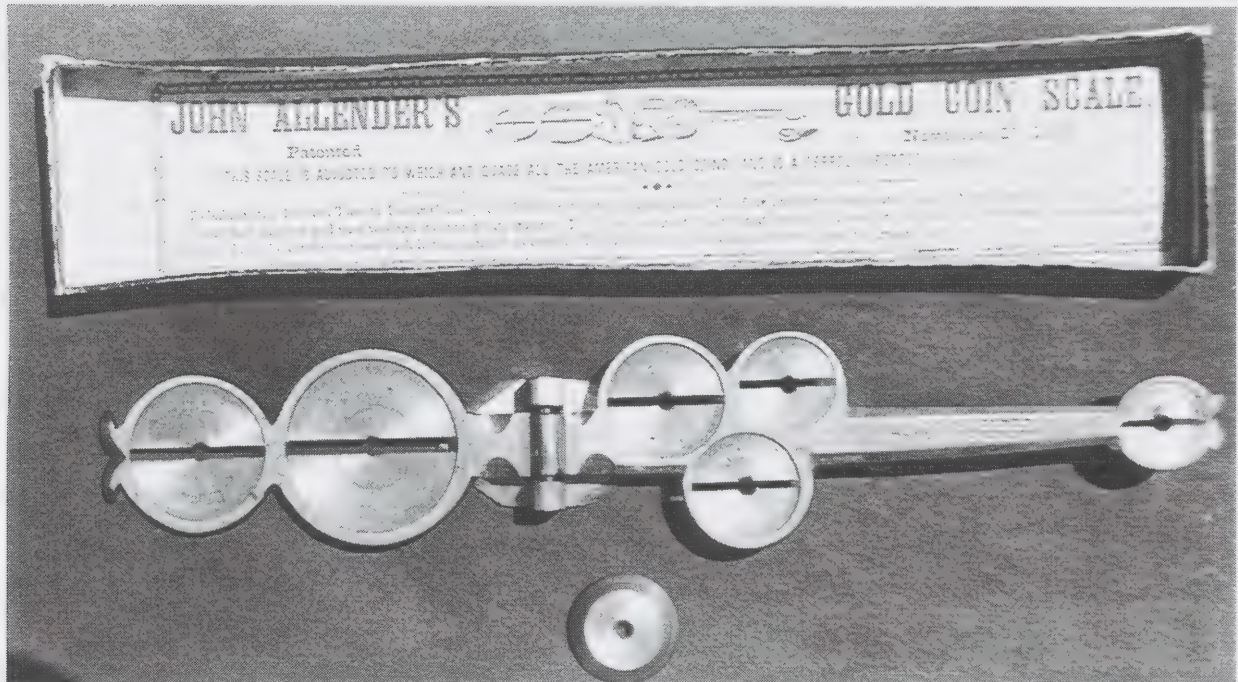
COUNTERFEIT COIN DETECTING MECHANISMS

ALLENDER DETECTORS

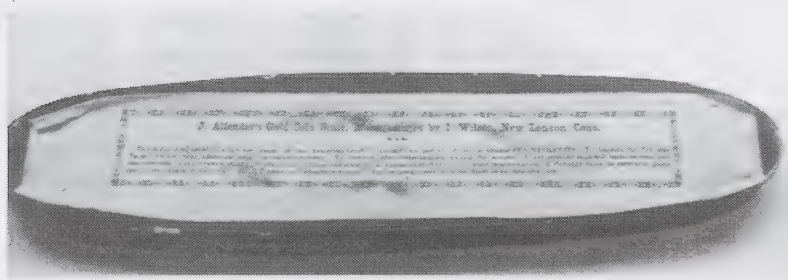
F. Patented Model; November 27, 1855 - continued

gold cross and dot design. Box has an original label of instructions for use. Also an oval cardboard box covered with black, ribbed paper. Box has an original label with instructions for use. In addition name of manufacturer, *I. Wilson, New London, Conn.* noted on label. Other type boxes are known.

(In Typical Rectangular Cardboard Box)



(In Typical Oval Cardboard Box)



ALLENDER PATENT
[CHP. IV : SEC. I]
[IV-1-10]

BACKGROUND ON JOHN ALLENDER DETECTORS

SECTION 1 - ALLENDER PATENT

In the Specifications for the Allender patent issued November 27, 1855, there is a specific mention of existing similar detectors. Allender stated:

I am aware that balances for proving coin have been made with two levers hung upon one fulcrum so arranged as to weigh all the coins upon one side of the said fulcrum, and when the larger coins were weighed the lever in which the small ones are weighed is turned to the opposite side of the fulcrum. Therefore I make no claim to instruments constructed with more than one lever and to weigh upon one side of the fulcrum only,

The explanation of what Allender intended to describe can be found on page 13 of Chapter III; Section 2 since the expression *two levers hung upon one fulcrum* is not technically accurate.

Changing the fixed weight on a folding English guinea and half guinea detector scale by swinging a brass arm 180 degrees on a horizontal bearing on the fixed weight side of the beam had been in extensive use in England from 1774 until shortly after 1817 when the sovereign and half sovereign were introduced. These hinged arms were referred to as turns. The English turn merely swung its weight on its hinge pin closer to or farther from the fulcrum, thus changing the effective moment of the fixed weight side. The scale could thus test two denominations using one turn. Usually there was only one turn on the beam but some English detectors were made with two turns to test three denominations (One detector even had five turns). The English turn remained entirely on the fixed weight side of the beam in its optional positions.

Myers used this principal with several major and novel variations. His hinge pin was virtually over the top of the fulcrum for the beam and not on the fixed weight side of the beam. The arm on his hinge pin had coin holders on its top side when in one position and exposed its plain bottom in the other position. When the gold coins to be tested required the use of the coin holders on the hinged arm, then the holders on the beam itself were blocked from use by the arm resting on top of the beam. When the holders on the beam itself were to be used the arm would be swung on its hinge pin onto the top of the fixed weight side of the beam. The effect of such a swing of the arm would increase the weight and moment of the fixed weight end of the fixed weight side of the beam was designed to create a moment equal to the remaining moment of the coin holder side of the beam plus the moment of a gold coin in the exposed coin holder. Myers also arranged in some devices to use more than one swinging arm on the same hinge pin.

Thus when Allender mentions *two levers hung on one fulcrum* he gave the ambiguous impression that the arm on the hinge pin was a second lever. A lever transfers force or motion applied to one part of its fixed beam across a fulcrum point to another part of the beam. Allender does however

BACKGROUND ON JOHN ALLENDER DETECTORS

SECTION 1 - ALLENDER PATENT

properly explained the operation of what he calls the second lever. His principal point is that his invention has a single beam or lever with coinholders facing upward on both sides of the fulcrum and that when he used an unattached counterweight to test any large coin on one side of the fulcrum he did not require any arm or turn swinging on a hinge pin. In the alternative he did not need any counterweight, arm or turn to test any small coin on the other side of the fulcrum. Thus all coin holders faced upward at all times on the Allender invention.

Allender had a positioning problem in developing the dimensions of his detector. He obviously wanted to place a coin holder for the largest coin as close to the fulcrum as was practical so that the detector would be small. If he placed holders for several denominations of gold coin on a beam he had to arrange their center points to be an inversely proportional distance from the fulcrum based upon their weight or denomination. Thus the center of a \$10 coin holder had to be twice as far from the fulcrum as the center of a \$20 coin holder on the same side of the fulcrum.

He originally intended to have five gold denominations for which to provide holders, namely, \$20, \$10, \$5, \$2.50 and \$1. To put all denominations on one side of the fulcrum, the center point of the \$1 holder would have had to be 20 times the distance from the fulcrum as the center of the \$20 holder. He did not wish the holders to overlap each other as that would complicate the circumference cut and the slot cut. If he had placed one edge of the circumference of the \$20 holder next to the fulcrum the opposite edge of the circumference would have to be a full diameter away and that same point would be the center point for the \$20 holder. Thus, the \$10 and \$20 coin holders would overlap substantially unless laterally offset. By moving the nearest point of the circumference of the \$20 holder about half a diameter away from the fulcrum the \$10 holder could be placed independently of the \$20 holder and its center would be twice as far from the fulcrum as the center of the \$20 holder and along a straight line. Allender placed the distance from the fulcrum to the center of the \$20 holder 5.53 cm away. If placed on the same side of the beam, the center of the \$2.50 holder would be 44.2 cm. away from the fulcrum and the holder for the \$1 gold coin would have to be 110.6 cm. away from the fulcrum. This would make the instrument much too long for convenience.

The Allender solution was to put the \$20 and \$10 coin holders on one side of the beam and the coin holders for the three smaller coins on the other, using a removable counterweight on the side of the beam for the smaller coin holders. In this way each side of the beam would have a specific fixed weight to check each coin placed in a proper holder on the other side. Without the counterweight in use the side for the smaller coins would normally be in a raised position and would balance the side with larger coin holders when a smaller coin was being tested. With the counterweight

BACKGROUND ON JOHN ALLENDER DETECTORS

SECTION 1 - ALLENDER PATENT

in place the side with the larger coin holder would normally be in a raised position and would balance the side with smaller coin holders when a larger coin was being tested. Allender had created a beam balance able to have its fixed weight side transferable at will to the other side by the use of a counterweight; and had created coin holders to test some denominations on one side of the beam and coin holders to test other denominations on the opposite side. He had reduced his beam length to be about 21.6 cm. This was still too long for pocket purposes and his original patent drawing eliminated the \$1 gold coin making it possible to reduce the length to about 6 cm. He realized the detriment of not accommodating the \$1 coin and started to manufacture the device with five coin holders for the five then existing gold coin denominations. Thus Allender eliminated some of the complexity of the Myers construction, but encumbered the device with a greater length and the nuisance of a small unattached counterweight which could be easily lost or misplaced.

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

It should be noted that while Allender's patent indicates the mechanism it to be used with the six then current gold coins, namely, the twenty, ten, five, three, two and one half and one dollar denominations, there are in existence six distinct models as herein before noted. The story behind the patent pending and the patented models can best be followed by the letters between John Allender and the Patent Office beginning with a letter from the Patent Office to James Snowden, Superintendent of the U. S. Mint in Philadelphia, dated Sept. 5, 1854 which reads as follows:

U.S. Patent Office, Sept. 5th 1854

Sir,

You will confer a favor upon this office by informing me whether there is in use at the Mint or within your knowledge any instrument for detecting spurious coin, consisting of an arm pivoted near its center or other wise & containing cavities of the proper sizes to receive the various coins, so situated with regard to the fulcrum that if genuine, an equilibrium is attained. Will you be kind enough to refer the office to any work wherein the description of such an instrument can be found, or give the office such information on the subject as is in your power.

*Respectfully Yours
James Ross Snowden, Esq.
Director, U.S. Mint
Philadelphia
W. C. L.*

ALLENDER PATENT
[CHP. IV : SEC. 1]
[IV-1-13]

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

It is obvious from the above letter that the Patent Office had concerns about granting a patent to what they believed already existed. This concern was furthered by the letter of H. R. Linderman acting for the Director of the Philadelphia Mint, to S. T. Sturgut, Esq., Acting Commissioner of Patents, dated Sept. 8, 1854 and which read:

*Mint of the United States
Philad.a Sept. 8, 1854*

Sir,

Your letter of the 5th inst. has been received. In reply I have to state that there are three instruments known at the Mint, answering to your inquiry; and there may be others.-- One was an invention of William M. Snider of Philadelphia, and first manufactured about six years ago, at which time Mr. S. was a machinist in the Mint. It is mentioned in the first edition of a small work on Coins and Bullion, by the Assayers of the Mint (December 1849) but not minutely described.

It is used in the Office of the Assistant Treasurer at Philadelphia, and by several banks. -- Another instrument is on a similar principle, but the coins are inserted horizontally, while in the former they are put in upright.-- A printed description of the latter is at hand, and is herewith enclosed. It is a more cheaply made instrument than Sniders, and does not work so accurately. We have had it several years.--

A third instrument, manufactured, and I suppose invented, by F. Meyers & Co. balance makers, Philadelphia, is on the same principle, varying in detail, and more portable than the others, though all are convenient enough as to Size. A description or drawing of this might be obtained from the manufacturers. We have had one for several years.

All of these instruments respond perfectly to the general terms stated in your letter; "An arm pivoted near its center or otherwise, and containing cavities of the proper sizes to receive the various coins, so situated with regard to the fulcrum, that if genuine, an equilibrium is attained.

I am very Respectfully,

*H. R. Linderman
for the Director.*

*S. T. Sturgut, Esq.
Act. Comms. of Patents.
Washington City.*

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

It is obvious from the above letter that the Patent Office had, what they considered sufficient information to deny Allender his patent on the grounds that such a mechanism already existed and therefore the Patent Office rejection of Allender's initial request had been rejected on April 19, 1850. For the first time here is the proof that Allender had requested a patent as early as 1850 and had the patent request rejected. Copy of letter sent from the U.S. Patent Office to John Allender Sept. 12, 1854;

U.S. Patent Office

Sept. 12 1854

Sir,

Upon examination of your application for Letters Patent for an alleged improvement in Coin Detectors, there is discovered no difference between your present alleged invention & that rejected under date of Apr. 19, 1850; and the office again refers you to the U.S. Mint at Philadelphia, where instruments similar to that claimed by you are and have some time been in use.

*Respectfully Yours,
John Allender, Esq.
Care of J. Dennis, jr.
Washington, D.C.
W. C. L.*

It seems rather obvious from the reading of the previous letters that the Patent Office had been sitting on Allender's request for a patent for some four plus years and now they were trying to find a reason to continue a previous denial. It also seems obvious that the Patent Office was still attempting to justify their denial as indicated by the letter from the Patent Office to Meyer & Co. asking for information on the mechanism nearly four months after their September 12, 1854 letter to Allender.

Letter from the U.S. Patent Office to F. Meyer & CO. balance maker, Philadelphia. Jan 06, 1855.

"U.S. Patent Office

Jan 6 1855

Gentlemen,

Will you be so kind as to furnish the office, with a description or drawing, if in your power, of an instrument for detecting spurious coin, made by you and which has for some time past been in use at the U.S. Mint of Philadelphia. By so doing you will confer a favor upon

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

Letter from the U.S. Patent Office to F. Meyer & CO. balance maker, Philadelphia. Jan 06, 1855 - continued
the office.

Respectfully Yours
F. Meyer & Co.
Balance Maker
Philadelphia

On the same day that the letter to Meyers was sent, the Patent Office wrote to Snowden as follows:

Jan 6, 1855

"U.S. Patent Office

Jan 6th 1855

Sir,

I have to express my thanks for the information contained in yours of the 8th Sept. I ask and herewith enclose a drawing of such an instrument as was described in the official letter of Sept. 5th, will you be so kind as to inform the office whether this is one of the instruments referred to by you, and if so, if it was made by John Allender and how long it has been at the Mint.

*I am very respectfully yours
Commissioner of Patents*

*James Ross Snowden, Esq.
Director U.S. Mint
Philadelphia
W.C.L.*

It is thus established that, in spite of the Patent Office continual denials, they were not certain that they were right and tried to find further evidence that Allender's design was in the public domain and therefore not patentable. Snowden's letter in reply must have caused some consternation at the Patent Office. The following letter from Director of the Mint, Snowden to Mason, Commissioner of Patents, dated January 10, 1855, further adds confusion to Allender's patent request:

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

Letter from Snowden to Mason, dated January 10, 1855

Mint of the United States

Philadelphia, January 10, 1855

Sir,

I have received your letter of the 6th inst and in reply have to state that the drawing enclosed therein corresponds precisely with one of the instruments (the Second) mentioned in my letter of September 8th for detecting Spurious gold coins of the United States; except that ours has also a place for the gold dollar. It is stamped "Warranted" but not "Patented" and there is no name about it. It was purchased at a shop in Chestnut st. in this City Some three or four years ago, we cannot tell precisely when the cost was trifling. It appeared to be for sale at a number of our principle Stationary Shops. Probably there are Stationers in Washington, who could give precise information, as to the time when the apparatus was first brought into market.

I am, Very Respectfully,

James Ross Snowden

Director

C. Mason, Esqr.

Comms. Patents

U.S. Patent Office

Washington City,

The fact that the second mechanism at the U.S. Mint corresponded exactly with Allender's drawings must have shaken up the powers that be at the Patent Office. Here was definite proof that an instrument exactly the same as Allender's and marked "Warranted" had come from outside of the mint. The Patent Office letter to Allender after receiving Snowden's letter of January 10, 1855 is even harder to imagine in view of the fact that Allender had tried since 1850 to get his patent. (In all probability the detector mentioned in the above letter was the Allender model of 1850 and noted as A above).

In spite of the definitive information contained in the Snowden to Mason letter of January 10, 1855, the Patent Office sent Allender a letter under date of January 15, 1855, that demonstrated sheer indifference to a legitimate complaint by Allender:

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

U. S. Patent Office

Jan- 15 1855

Sir,

In accordance with the verbal request of your agent the office has addressed the Director of the U.S. Mint at Philadelphia, & learned that the instrument there employed & to which you have been referred is identical with your own, & that it was purchased some three or four years since at a shop in Chestnut St. If therefore the instrument is your own, by its abandonment to the public you have prevented yourself from obtaining a patent therefor - Your application must accordingly again stand rejected.

Respectfully Yours

John Allender, Esq.
Care of Jon. Dennis, jr.
Washington D.C.
W.C.L.

On the next day, the Patent Office received a letter from Henry Troemner that clearly indicated that the mechanism invented by Snider in the U. S. Mint could not have been the same as the one Allender had tried to have patented since 1850. Troemner's letter makes this very clear that these were two different types.

Copy of letter from Henry Troemner to C. Mason Jan. 16 1855;

Philadelphia Jan 16th 1855

To C. Mason Esq. Comms of patents.

Dr Sir

I have received your communication of the 6th inst. addressed to F. Meyer & Co. in regard to the instrument used in the U.S. Mint for the detection of counterfeit Gold coin - as you have Stated "made by us".

The partnership of Meyer & Co is dissolved - the business is now carried on by H. Troemner one of the firm.

The balance to which you refer, was invented and made by Mr. W. M. Snider of the U.S. Mint - We have made a few by his direction, and are prepared to execute orders for them under his instructions.

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

Copy of letter from Henry Troemner to C. Mason Jan. 16 1855; - continued

As it is not convenient to make a drawing I send you pr Adams Express one of the Balances which has been in use for several years--

You can therefore judge for yourself of its Efficacy. it was made before the \$3 piece was coined, the principle will allow it to be extended indefinitely. Mention is made of it on page 36 of a work entitled "New Varieties of Coins and Bullion" by the Assayer of the U.S. Mint - which I take the liberty of transcribing " If the counterfeit should happen to be of right weight, then its too great thickness, would be apparent to a careful Examiner, & as the Balance is not very portable or ready apparatus, several instruments have been contrived expressly for the purpose of trying gold coin --

We know of know more ready & effectual than one lately invented by Mr. W. M. Snider, machinist in the U.S. Mint -- Its value is attested by Mr. Parry Clark in the Office of the Assistant Treasurer, of the U.S. Mint at Philadelphia who has one in constant use -- Its merits consist in enabling the experimenter to decide by a single move, as to the weight, diameter & thickness, of any of the coins in our Series - in being so carefully adjusted, as to detect any known counterfeit, by one or other of these measurements, and in a general simplicity of arrangement which obviates the liability to "get out of order

You will oblige by returning the Balance (pr Adams Express) to Mr. W. M. Snider at the U. S. Mint in this city -- at your earliest convenience.

Respectfully

Henry Troemner

Troemner's letter to Mason was dated January 6, 1855 and should have satisfied Mason that Allender had indeed a right to a patent. Yet on March 21, 1855, Allender wrote to Charles Mason as follows:

To Hon". Charles Mason. Commissioner of Patents.

Sir,

Your letter of the 15 ult". was duly received and contents noted. You state upon the authority of a letter from the Director of the Mint that the Instrument "was purchased some three or four years" since at a shop on Chestnut Street Philadelphia. If "therefore the Instrument

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

is your own, by its abandonment to the" "Public, you have prevented yourself from obtaining a Patent:" "therefore: your application must accordingly again stand" "rejected."

I therefore ask your consideration of the following statement (vis), It appears by the records of the Patent Office that I filed an application for a Patent for this Invention the 26th of March 1850: and that the papers were returned for amendment the 11th of April 1850: the papers were amended + returned to the Office, the 18th of the same month; and rejected the 19th: referring to the "United States Mint in Philadelphia: and stated that no more definite information can at present be given".

Upon the receipt of this rejection I (John Allender) visited the Mint and exhibited my Invention to Colo. Snowden, the Treasurer: and Mr. Peal Chief Coiner, they both said " they neither had heard of nor had ever seen any thing like it: and I presented their statement in an argument dated 25th of May 1850. upon which my case was reconsidered, and rejected again the 19th of June 1850 without giving any references.

The attention of Commissioner Ewbank, was called to the case by an argument dated May the 30th 1851 who rejected my application again June 2nd. 1851. and refused to grant a Patent because in his judgement I had not Invented any thing new which decision I believe to be erroneous, because it does not appear that such an Invention had ever been made until I made it. As the Rules of the Patent Office debarred me from any farther (sic) action under that application, I was compelled to abandon it, and file another which you have refused to grant me a Patent, because the instruments were sold more than two years prior to my last application. Now the records and files of the Patent Office afford the most ample evidence that I made the greatest exertions to obtain a Patent under the first application and used due diligence only abandoning it because the rules of the Office did not permit me to press it farther. Hence it is fully apparent that there has been no laches on my part; as I believe I made every effort that it could be reasonably expected I should make to obtain a Patent. And if after considering all the circumstances of the case, you should still consider that I am debarred from obtaining a Patent under the last application; I respectfully request you permit me to refund the money withdrawn under the first application, and allow me to obtain a Patent upon that. I hope you will grant my request as I understand that one applicant was permitted to refund the money he had withdrawn and go into an Interference & I believe it has been done several times.

Craving your favorable consideration of the whole matter I remain Respectfully etc.

ALLENDER PATENT
[CHP. IV : SEC. 1]
[IV-1-20]

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

John Allender

By his attorney J. Dennis Jr.

Washington 3 Mo [March] 1855

Again the Patent Office showed a callus disregard for Allender's rights by failing to acknowledge that the Patent Office itself was the culprit by their letter of May 4, 1855 which is quoted below:

U. S. Patent Office

May 4th 1855

Sir,

In accordance with the request of your letter of the 21st of March, the Commissioner has himself examined the question involved therein; and it is decided that it will be equally impossible to receive back the twenty dollars & cancel the withdrawal of your former application and to grant you a patent upon your present application in view of the fact that your alleged invention has been in use & or sale for more than two years prior to the date thereof, & so far as at present appears, with your consent & allowance.

Your application must therefore again stand rejected --

Respectfully Yours,

John Allender

Care of Johnathan Dennis, jr.

Washington,

D.C.

W.C.L.

Allender again appealed for simple justice in his cause by his letter of July 3, 1855 to Charles Mason, Commissioner Patents;

To Hon Charles Mason Com. Patents.

Sir

Your letter of May the 4th was duly received and contents noted. You say "it is decided that it will be equally impossible" "to receive back the twenty dollars and cancel the withdrawal of" "your former application and to grant you a patent upon your present application in view of the fact that your alleged" "invention has been in use, and on sale, for more than two years" "prior to the date there - of and so far as at present appears, with" "your consent and allowance. Your application must therefore again" "stand rejected." In answer to the above I beg leave to reply that my first application of which the present is but a continuation as I shall presently show was filed the 26th of March 1850, in pursuance of the official Circular entitled

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

Allender letter of July 3, 1855 to Charles Mason, Commissioner Patents;
- continued

"Information to Persons having business to transact with the United States Patent Office" which contained the following notice viz.,

To relieve applicants from the necessity of employing agents to transact their business with the Patent Office, so far as it is in the power of the office to do so, the examiners are instructed to decide the questions of the novelty and patentability of inventions upon papers imperfectly prepared, if they are sufficiently perspicuous to enable them clearly to understand the invention claimed, when such papers are prepared by the inventor without the intervention of an agent. But if an agent be employed, it being presumed that he is qualified for the business which he undertakes, and needs not, nor is entitled to, instructions in relation to it, the office which has not the time, nor is bound by law in any case to give instructions) will, in all cases, leave it to him to prepare and present the claims of the applicant, and will decide upon them as they are presented.

I, accordingly prepared my application myself and presented it without success for a time and thrice with the aid of an agent which I believe to be competent with no better success until the Commissioners were changed. When all proceedings before the new Commissioner on my application was stopped by the following rule from the official Circular above mentioned viz.

Sec. V. OF THE PROCEEDINGS DURING EXAMINATION.

Applicants are examined and patents issued in the order in which the proper documents are completed, except in cases in which the claims so nearly resemble those undergoing examination, as to render interference probable; in which case they will be taken up and examined with the cases then under examination.

A decision deliberately made and affirmed by one Commissioner, cannot be disturbed by his successor. Some years since the evils arising from such revisions became so apparent and embarrassing, that a positive rule to that effect was adopted. It was submitted to, and approved by, the President of the United States.

As I believed myself entitled to a patent and could get no further action on the application then before the patent office; I prepared a new one, and withdrew the first and filed the second one immediately for the same invention, so that my present application although subsequent in date is in fact but a continuation of the first and should be so considered according to the ruling or decision of Chief Justice Cranch, in the case of Wade V. Mathews, see Book of Appeals patent of file records Vol. 1 page 403 a copy of which is herewith enclosed. If you require any further testimony in the matter I will file my own affidavit corroboratin[g] by the affidavit of my attorney in proof of

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

the proceedings in my case.

By the perserverance of my present attorney it has been satisfactory ascertained that the references given in rejecting my first instance was my own invention or in other words one of the instruments which I had made, which had found its way into the United States Mint at Philadelphia.

Now it is unfortunate for me that I have not been able to obtain a patent for my invention sooner; and that my efforts to supply the public with a convenient scale to prevent the circulation of Spurious coin without waiting for the patent to be granted should have resulted in defeating my application so long and subjected me to so much expense. I confidently hope since it has been satisfactory ascertained that I was refused a patent, your Honor, will as a simple act of justice and by the ruling or decision of Chief Justice Cranch decide that my last application is but a continuation of the first and grant me a patent accordingly.

As I believed myself entitled to a patent and could get no further action on the application then before the patent office; I prepared a new one, and withdrew the first and filed the second one immediately for the same invention, so that my present application although subsequent in date is in fact but a continuation of the first and should be so considered according to the ruling or decision of Chief Justice Cranch, in the case of Wade V. Mathews, see Book of Appeals patent of file records Vol. 1 page 403 a copy of which is herewith enclosed. If you require any further testimony in the matter I will file my own affidavit corroboratin[g] by the affidavit of my attorney in proof of the proceedings in my case.

Respectfully Etc.

John Allender

By his atty. J. Dennis jr.

Washington July 3d 1855

Even with this most powerful argument by Allender's attorney for his clients simple right and as enumerated by the Chief Justice, the Patent Office still was involved with their bureaucratic nonsense as evidence by their letter in reply to Allender, dated July 10, 1855;

U.S. Patent Office

July 10-1855

Sir,

In reply to your letter of the 3 Inst- and the arguments therein ad-

ALLENDER PATENT
[CHP. IV : SEC. 1]
[IV-1-23]

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

vanced why a patent should still be granted to you for your alleged improvements in Instruments for Detecting Spurious Coin; it is replied that the application having received a personal and final decision from the late Commissioner of Patents cannot now be reopened, nor his decision reexamined by the present Acting Commissioner.

The pertinency of the decision of Judge Craunch, referred to by you is however recognized; and should you elect to file again a new application therefor, you will be entitled to the advantage which is secured to you, by said decision --

Respectfully yours

John Allender
Care of Jon. Dennis Jr.
Washington, D.C.

If there was any doubt about the inadequacy of the Patent Office of that time, to carry out its lawful obligations, this letter to Allender is prima facie evidence of that fact. To tell a citizen that an error made by a preceding official cannot be corrected, even with the force of the Chief Justice's ruling, is arrogance at its best. Today such action would no doubt result in a law suit for damages against such official or officials. To further aggravate the matter, Allender's lawyer's letter of reply of October 9, 1855 is a master piece of diplomacy.

To Hon. S.T. Shugart Acting Com. Pts.

Sir

Your Letter of the 10th of July last was duly received and contents noted. Permit me to state in reply that I procured a copy of Judge Cranch's decision and showed it to the Hon. C. Mason, before he left the Office. He read it and I stated the case to him and he admitted its force and suggested to me to present the copy so that the case would again come before the Examiner, which I did in my letter of the 3d of July, which I filed before Mr. Mason, left the office. The Examiner says the papers did not reach him until Mr. Mason had gone but that was no fault of mine, the case was entitled to the same consideration after the Com. had left that it would have been if he had remained because the papers were filed as he directed before he left. Besides I understand that his resignation was not, and has not been accepted but that he is still Com. of Patents. Now Mr. Mason's decision denying Mr. Allender a patent made the 15th of Jany last and affirmed the 4th of May following, is, was + fully and emphatically Answered by Judge Cranch's decision as recorded in the book of Appeals page 403. and you state in your letter of July 10th that "The pertinency of the decision of Judge Cranch, referred to by you, is however

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

Copy of a letter from John Allender's attorney to S.T. Shugart, Acting Commissioner of Patents; - continued

recognized; and should you elect to file again a new application therefore, you will be entitled to the advantage secured to you by said decision". Now as Mr. Mason's resignation was not accepted Mr. Allenders case under the present application is clearly and certainly entitled to as much consideration and he is certainly as much entitled in law and justice to receive a patent under it as he would be if he filed a new application he has complied with the requirements of the law twice to obtain a patent for his invention, and it seems to me it would be doing him great injustice to compel him to comply with the requirements of the law the third time for the same invention, when he has been so unfortunate as to be rejected by a reference to his own invention. For I understand your honor to say that the 2d application must be considered as a continuation of the first and if so that of itself is a full answer to the decision of Mr. Mason on the 15th of Jany, last. Now it seems to me that Justice, simply Justice, demands that Mr. Allender should have a patent issued to him without further delay. And I should think you would rejoice that the misapprehension which has attended his applications had been discovered, and that it would afford you pleasure do all in your power to repair Mr. Allenders Losses by granting him a patent to which he appears to have been long entitled to receive.

*Respectfully & C. J Dennis Jr.
Atty for John Allender
Washington 10 mos 9th 1855*

In spite of the most factual and eloquently written letter to the Commissioner of Patents, the Patent Office still refused to acknowledge their errors and continued its autocratic ways as evidenced by the letter of October 30, 1855 to Allender:

U.S. Patent Office

Octo 20th 1855

Sir -

No further action can be had in your case for reasons set forth in the Official letter of July 10th 1855 - Should the Con. Chas. Mason resume the duties of Commissioner of Patents, your arguments may be in some degree applicable to the case -

*Respectfully Yours &c
John Allender, Esq.,
Care Jonathan Dennis Jr.
Washington, D.C.*

ALLENDER PATENT
[CHP. IV : SEC. 1]
[IV-1-25]

ALLENDER'S PROBLEMS WITH THE PATENT OFFICE

Finally and without any explanation, on November 27, 1855 John Allender was issued Patent No. 13,840 for his "Coin Tester" bringing to an end a most bizarre scenario that would read like something out of a totalitarian government rather than the United States.

CHAPTER IV

DESCRIPTION OF KNOWN COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 2 - McNALLY INVENTOR McNALLY-HARRISON PATENT

This series of counterfeit coin detectors is another one of those that is difficult to place exactly as to time and place. Such detectors, on a thick black walnut base and simply marked on the counterweight side, *J. T. McNALLY INVENTOR* are known in collections. The same basic style of detector, on a thin mahogany base, and identically marked is also known. There are no records of any patent ever having been issued to a J. T. McNally for this "INVENTION".

From an advertisement in *THE AMERICAN BANKER* of May 1879, a JOHN S. DYE of Chestnut Street, Philadelphia, PA., had thin base models, marked *J. T. McNALLY INVENTOR*, for sale at \$2.50 each.

Another example similar to the one noted in the Dye advertisement, is one where the base is of walnut, cut somewhat like the thin mahogany base except that the base is edge molded and quite thick. Which of these two models came first is not known.

On February 28, 1882, a DESIGN No. D12,795 was issued by the Patent Office to John T. McNally and Walter H. Harrison.

In the May 20, 1882 Issue of Harper's Weekly there is an advertisement by *THE INFALLIBLE COIN SCALE CO.*, 267 Broadway, New York City for an identical counterfeit coin detector on a cast iron base. The same detector under the name of *THE FAIRBANKS' INFALLIBLE SCALE CO.*, Equitable Building, Baltimore, MD. and the name of W. H. Harrison as Manager is known. To further complicate the matter there is an *Illustrated Catalogue and Price List of Supplies* issued in 1906 by *THE FAIRBANKS COMPANY* with offices in several cities including New York City and Baltimore, offering a counterfeit coin detector based upon the HOAG patent, but none listed of the McNally/Harrison design.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

McNALLY INVENTOR MODEL

The earliest known McNally device is the one, rather crudely made, on a thick walnut base. The only evidence available, is that this model came into being in circa 1879. The tang of the device holding the counterweight is clearly marked *J. T. McNALLY INVENTOR*.

JAMES T. McNALLY: Inventor Model Date: Circa 1879.

TYPE: Rocker

DESCRIPTION

Black finished, brass sheet metal beam with attached metal rib on the underside of the long sheet metal arm. Integral tang with the long arm to which is attached a square metal counterweight fastened to the tang with a metal screw. Steel knife edges fastened to the metal beam and inserted into two black finished, brass posts. Posts are screwed into a walnut base. Beam is eight and seven eighths ($8 \frac{7}{8}$) inches long. Base is nine and one half ($9 \frac{1}{2}$) inches long, two and three quarters ($2 \frac{3}{4}$) inches wide and one half ($\frac{1}{2}$) inches thick. Long arm of the beam is slotted to receive silver coins of one (\$1.00) dollar, fifty (0.50) cents and twenty-five (0.25) cents and gold coins of one (\$1.00) dollar, two and one half (\$2 $\frac{1}{2}$) dollar, three (\$3.00) dollar, five (\$5.00) dollar, ten (\$10.00) dollar and twenty (\$20.00) dollar denominations. Width and length of slots will accommodate only genuine coins. Hole at the end of the long arm to accommodate small counterweight used for weighing the gold dollar.

BOX

There is no box with this detector.

NOTE:

The belaying pin type counterweight is often missing from these detecting mechanisms. The engineering drawing indicates its measurements.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

McNALLY INVENTOR MODEL

JAMES T. McNALLY: Inventor Model Date: Circa 1879

Early model on a thick walnut base
Marked *J. T. McNally, Inventor*



McNALLY-HARRISON PATENT
[CHP. IV : SEC. 2]
[IV-2-3]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

JAMES T. McNALLY: Inventor Model Date: Circa 1879

A second example of the INVENTOR type is described below:

TYPE: Rocker

DESCRIPTION

Nickel plated, brass sheet metal beam with attached metal rib on the underside of the long sheet metal arm. Integral tang with the long arm to which is attached a square nickel plated metal counterweight. The counterweight is fastened to the tang by a metal screw. Steel knife edges are fastened to the sheet metal beam and inserted into two nickel plated metal posts. The metal posts are fastened to a mahogany base with screws. The beam is eight and one half ($8 \frac{1}{2}$) inches long. The wood base is nine (9) inches long, two and five eighths ($2 \frac{5}{8}$) inches wide and three-eighths ($\frac{3}{8}$) inches thick. The long arm is slotted to receive silver coins of one (\$1.00) dollar, fifty (0.50) cents and twenty-five (0.25) cents. Also gold coins of the one (\$1.00) dollar, two and one half (\$2.50) dollar, three (\$3.00) dollar, five (\$5.00) dollar, ten (\$10.00) dollar and twenty (\$20.00) dollar denominations. Width and length of each specified slot will accommodate only genuine coins of that denomination. There is a hole at the end of the long arm to receive a small counterweight used in weighing the one dollar gold coin.

BOX

Rectangular cardboard box, covered in black paper with instructions for the use of the scale plus standard and minimum weights of genuine gold coins. The box is nine and three eighths ($9 \frac{3}{8}$) inches long, two and three quarter ($2 \frac{3}{4}$) inches wide and two (2) inches deep. No makers name on box.

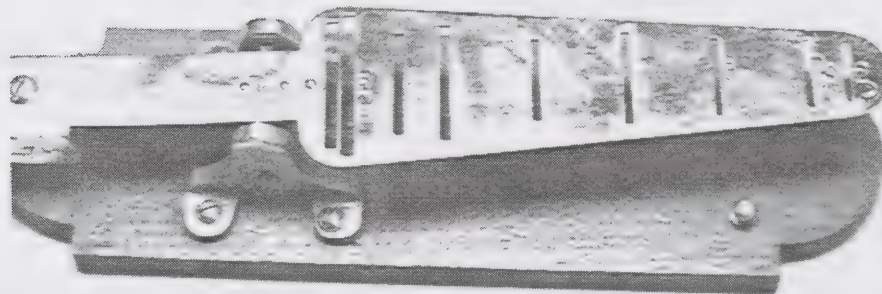
COUNTERWEIGHT auxiliary

The small, auxiliary, belaying pin type, counterweight used to weigh the one dollar gold coin is shown in the photograph of the counterfeit coin detector.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

JAMES T. McNALLY: Inventor Model Date: Circa 1879

(An early model on a thin walnut base
with its original peg type counterweight
and marked *J.T. McNALLY, INVENTOR.*)



(An early model on a thin walnut base
with its original peg type counterweight
and marked *FAIRBANKS & CO.*)



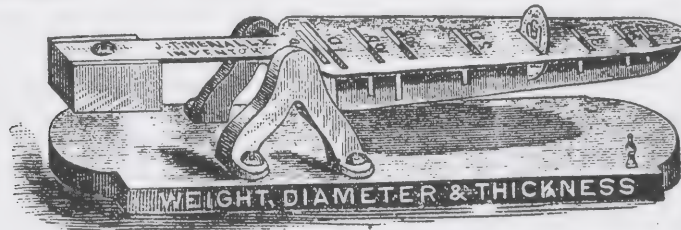
DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

JAMES T. McNALLY: Inventor Model Date: Circa 1879

Advertisement in
THE AMERICAN BANKER of May 1879,
JOHN S. DYE of Chestnut Street, Philadelphia, PA.,

(Thin base model marked
J. T. McNALLY INVENTOR
for sale at \$2.50 each).

NEW INVENTION.



United States Gold and Silver Counterfeit
COIN DETECTOR.

SHOWING AT ONCE THE THREE TESTS, BY WEIGHT,
DIAMETER AND THICKNESS.

PRICE \$2.50 EACH.

The resumption of Specie payment and the current use of gold and silver coin has given counterfeiters a new field of operation, which they have already energetically improved by the issue of spurious "Trade" and new "Legal Tender" United States Silver Dollars, with counterfeits of the small coins of that metal, in great quantities. Recently, a number of exceedingly dangerous counterfeits of United States Gold Coins, of various denominations, have been manufactured on a large scale, and, with any amount of old style bogus, are being rapidly shoved into circulation.

The attention of bankers and men of business is especially invited to the "Coin Detector" here advertised and illustrated; it is the best Coin Scale in existence adapted to common use, and by far the cheapest, considering the quality of the article and its general usefulness.

N. B.--Agents wanted in all parts of America; for sample outfit and terms, forward \$3.00 to

JOHN S. DYE,

1338 CHESTNUT ST., (Opp. United States Mint,) PHILA., PA.

McNALLY-HARRISON PATENT
[CHP. IV : SEC. 2]
[IV-2-6]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

JOHN T. McNALLY & WALTER H. HARRISON

Design No. 12,795

Feb. 28, 1882

TYPE: Rocker

DESCRIPTION

Nickel plated, brass, sheet metal beam with attached nickel plated metal rib on the underside of the long sheet metal arm. Integral tang with the long arm to which is attached a nickel plated metal counterweight. The counterweight is attached to the tang with a metal screw. The word "Patented" appears on the side of the counterweight. Steel knife edges are fastened to the sheet metal beam and inserted in a cast iron base with cast in place posts that are the bearing points for the beam. Knife edges of the beam are held in place in the cast iron posts by means of a set screw. Cast in the base is "FAIRBANK'S INFALLIBLE" decorated with gold stripes and stylized flowers. Stamped on the tang are the words "FAIRBANKS INFALLIBLE SCALE CO. BALTIMORE, MD., USA". The long arm is slotted to receive silver coins of one (\$1.00) dollar, fifty (0.50) cents and twenty-five (0.25) cents. There is a hole at the end of the long arm to receive a small counterweight to be used in weighing the one dollar gold coin.

BOX

Rectangular cardboard box covered with black cloth. Exterior stamped in gold letters is the name of the manufacturer and W. H. Harrison as the Manager. Hinged top and side panel. Inside is a label on the use of the detector along with the legal weight and least weight of United States gold coins. In addition, on the drop side panel is an advertisement concerning the Fairbanks Infallible Scale Companies "The Bankers' New Improved" scale for the bulk weighing of gold and silver coins.

It will be noted that this patent number date is some twenty seven years after Allender's patent date of 1855 and yet has a patent number lower than Allender's. The answer lies in the fact that Allender's, and his peers' patents, were for "inventions" whereas McNally/Harrison's patent was for "design".

McNALLY-HARRISON PATENT

[CHP. IV : SEC. 2]

[IV-2-7]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

JOHN T. McNALLY & WALTER H. HARRISON

Design No. 12,795

Feb. 28, 1882

ADVERTISEMENT IN
HARPERS' WEEKLY
MAY 20, 1882

(Note that the name of the company is
INFALLIBLE COIN SCALE CO.
267 Broadway, New York City)

MAY 20, 1882

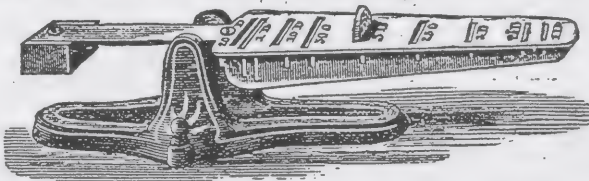
HARPER'S WEEKLY.

VOLUME XXVI., NO. 1326.

THE INFALLIBLE COIN SCALE

Renders the Detection of Counterfeits Certain.

AGENTS
WANTED
EVERYWHERE.



DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

JOHN T. McNALLY & WALTER H. HARRISON

Design No. 12,795

Feb. 28, 1882

THE AMERICAN BANKER
(advertisement of Sept. 1890)

This device appears to be an exact duplicate of the McNally-Harrison design but mounted on a rectangular cast iron base. Who the manufacturer was is not indicated in the advertisement.

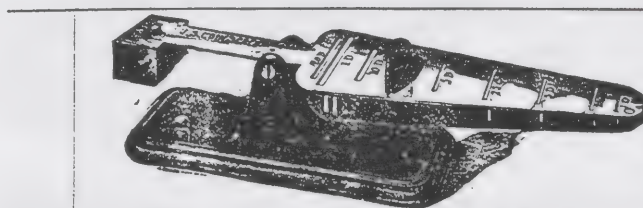
Sept. 1890
257 Broadway, New York City, SOLICITS YOUR ACCOUNT.

Underwood's Counterfeit Reporter.

4

UNITED STATES

Gold & Silver Counterfeit Detector.



UNITED STATES GOVERNMENT STANDARD.

INSTANTLY DETECTS COUNTERFEIT AND LIGHT WEIGHT COINS.

GOLD COINS, \$20, \$10, \$5 \$3 \$2.50 and \$1.
SILVER " \$1, 50 Cents and 25 Cents.

Gives weight, diameter and thickness, three tests the counterfeiter cannot overcome.

Gold and Silver being so largely in circulation, gives to counterfeiters and those engaged in sweating, abraising, filling, clipping or making light coin, a large field for operation, which they energetically use to an enormous extent. The "United States" will quickly detect counterfeit or light weight coin. Elegantly nickel-plated and mounted on metal stands, and always ready for use; mailed to any part of the country for \$2.50.

ADDRESS:

THE AMERICAN BANKERS' AGENCY

P. O. Box 411.

27 Park Place, N. Y.

McNALLY-HARRISON PATENT

[CHP. IV : SEC. 2]

[IV-2-9]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

JOHN T. McNALLY & WALTER H. HARRISON

Design No. 12,795:

Feb. 28, 1882

THE M. B. COIN SCALE CO.
(Insert which accompanied the detector)

UNITED STATES GOVERNMENT STANDARD
Gold and Silver Coin Tester
AND
Counterfeit Coin Detector.

INSTANTLY DETECTS COUNTERFEIT AND LIGHT WEIGHT COINS.

GOLD COINS, \$20, \$10, \$5, \$3, \$2.50, \$1.

SILVER COINS, \$1.00, 50 Cents, 25 Cents.

Approved by the United States Government, and now in use in all the departments, also Bankers, Brokers, Insurance, Express, Railroad and Telegraph Companies, Municipal and State Authorities, and Business men generally throughout the United States and Canada.

Gold and Silver Coin being out of circulation for years, is now becoming the chief circulatory medium, and gives to Counterfeiters, and persons engaged in sweating, abraiding, filling, clipping the Gold and Silver Coins, a field of operation which they have energetically used by issuing Counterfeit Coins, and sweating, abraiding, and making light the genuine coin in immense quantities.

With the M. B. COIN TESTER in your possession, it is impossible unknowingly to take a Counterfeit or light coin.

Elegantly nickel-plated, mounted on metal stands, with box and directions complete, packed and delivered in good order, to any address on receipt of price.

With each Tester we give the Full Standard and least legal current Weight of all Gold Coins.

We guarantee to redeem for a period of five years all counterfeit gold or silver coin which our tester fails to detect, thus affording absolute insurance from counterfeit coin for \$1.00 a year.

Gives Weight, Diameter, and Thickness, three tests that the counterfeiters cannot overcome.

Insist on having one of our GUARANTEE CERTIFICATES which we furnish with each Tester.

Sent Free by Registered Mail on receipt of price, \$2.50.

Make drafts or money orders payable to the order of

M. B. COIN SCALE CO.,

189 FIFTH STREET, MILWAUKEE, WISCONSIN.

McNALLY-HARRISON PATENT

[CHP. IV : SEC. 2]

[IV-2-10]

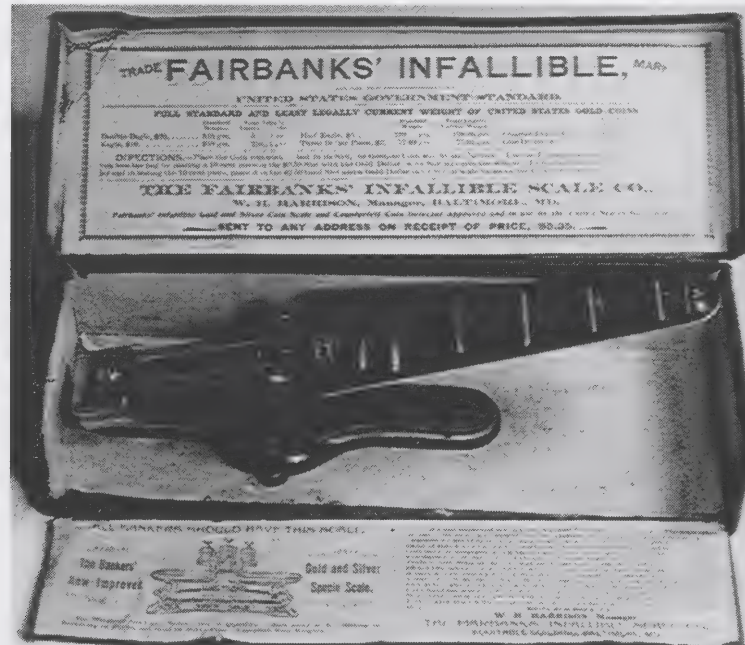
DESCRIPTION OF KNOWN COUNTERFEIT COIN DETECTING MECHANISMS

JOHN T. McNALLY & WALTER H. HARRISON

Design No. 12,795

Feb. 28, 1882

FAIRBANKS INFALLIBLE SCALE CO.
OF BALTIMORE, MD.



ABSOLUTE SECURITY AGAINST FRAUD.



THE THREE TESTS AT ONE MOTION—WEIGHT, DIAMETER AND THICKNESS.

NO CASHIER, TELLER OR BUSINESS MAN SHOULD BE WITHOUT ONE.

SIMPLICITY! RELIABILITY! DURABILITY!

McNALLY-HARRISON PATENT

[CHP. IV : SEC. 2]

[IV-2-11]

(from Money, 1896, by Fairbanks Infallible Scale Co.)

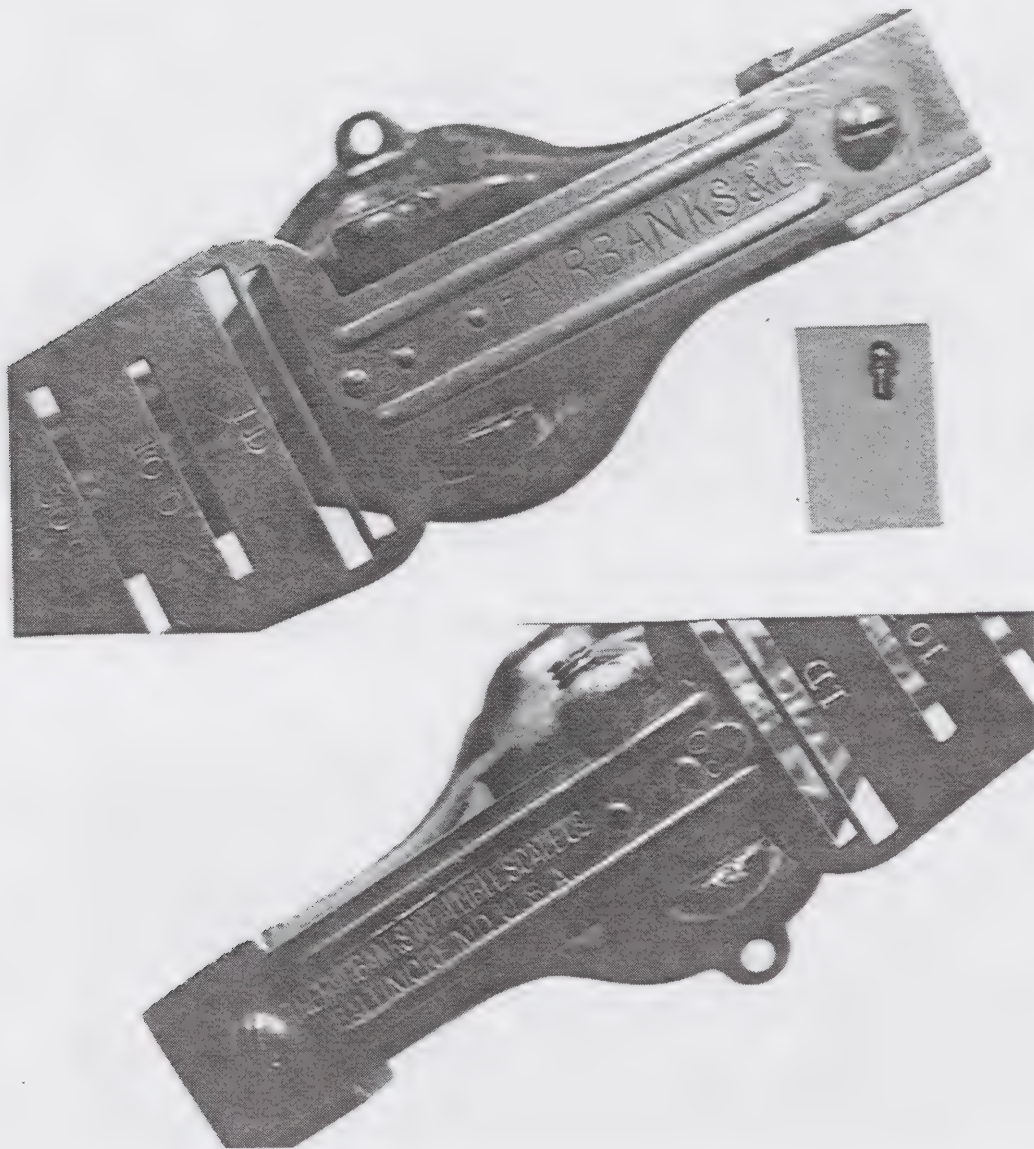
DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

JOHN T. McNALLY & WALTER H. HARRISON
Design No. 12,795

Feb. 28, 1882

FAIRBANKS & CO.
(An example with cast iron base)

This is the McNally/Harrison Design Patent. The exactness of the Fairbanks Model with the Fairbanks Infallible Scale Co. is the same item with a different name plate.



McNALLY-HARRISON PATENT
[CHP. IV : SEC. 2]
[IV-2-12]

CHAPTER IV

DESCRIPTION OF KNOWN COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 3 - JOHN A. THOMPSON

John A. Thompson of Chicago, Illinois was the inventor of three patent-ed counterfeit coin detectors. His first with a patent date of February 27, 1877, was numbered 187,936 and was of the rocker type design. This was the more common, so-called *Bent Plate* design. The second patent, also for a rocker type device, has a patent date of April 3, 1877 and was issued under number 189,284. This detector was of the more conventional rockers in that it had a long arm into which the coins were placed and the short arm acted as the counterweight. The fulcrum was the bottom of the leading edge of the short arm. The final Thompson patent was issued on February 24, 1880 under patent number 224,807 and was again for a bent plate design but this device had two fulcrums as it allowed for coins to be weighed on either side of the two fulcrums.

The *Bent Plate* design was assigned by Thompson to a Francis M. Smith of Lake, Illinois. What Smith did with the patent is not known but what is known is that the *BERRIAN MANUFACTURING CO., NEW YORK* made and sold this detector under the name of *GOLD and SILVER COUNTERFEIT COIN DETECTOR PAT'D FEB 27, 1877*. It is also known that *JOHN CHATILLON & SONS, NEW YORK* made and sold the same device noting it as *BERRIAN'S PATENT*. It is therefore reasonable to infer that Smith sold the patent to Berrian who in turn authorized Chatillon & Sons to sell the detector.

JOHN H. THOMPSON Pat. No. 187,936

Feb. 27, 1877

TYPE: Rocker

DESCRIPTION

Nickel plated, brass plate bent in the form of a "Z". The lower part rests on a flat surface while the upper part is slotted to receive different coins of various denominations. There are two sets of slots for each coin. One set measures the width and diameter and the second set of like numbered slot, is used to weigh the coin. The lower part of the device acts as the counterweight. Slots are provided for all of the gold and silver coins then current in the United States. A full weight coin will cause the device to tip about its fulcrum which is the vertical portion of the horizontal "Z". The device is nine and one half (9 1/2) inches (24.13 cm.) long and two (2) inches (5.08 cm.) wide. Made by *Berrian M'F'G. Co. N.Y.* and very often referred to by some as *Berrian's Patent* when in fact it is Thompson's patent.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

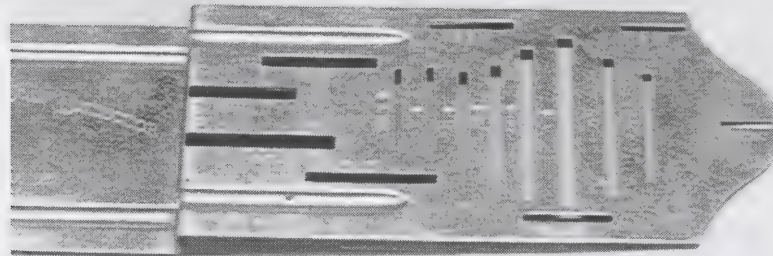
BOX

Some devices are known boxed.

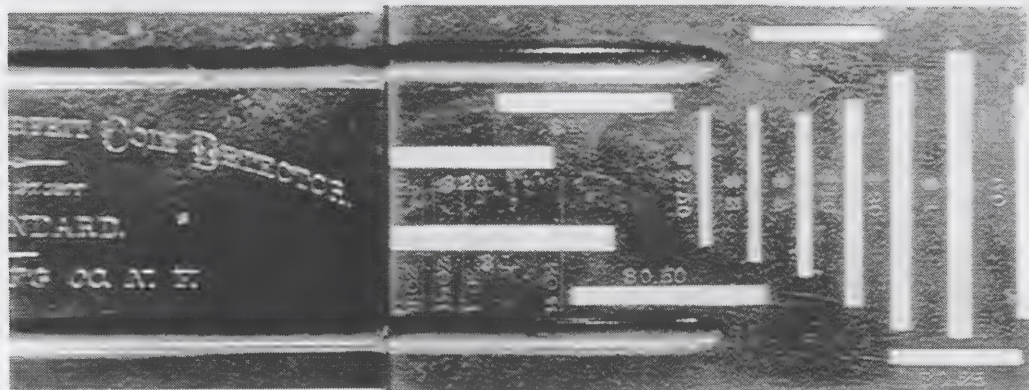
NOTE:

There is also a model of this patent with a slot marked in ounces with which to weigh letters. There is known literature as to how this was to be done. and the authors are grateful to Mrs. Frank Wright (Betty) for sharing the information contained herein.

MODEL WITHOUT ANY
MARKINGS TO WEIGH LETTERS



MODEL WITH MARKINGS
TO WEIGH LETTERS



DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

PAGE FROM THE CATALOGUE OF
JOHN CHATILLON & SONS, NEW YORK

Device marked BERRIAN M'F'G Co. N.Y.

TWO MEDALS OF EXCELLENCE

AWARDED BY

American Institute

CHATILLON'S

GOLD AND SILVER

Counterfeit Coin Detector,

(BERRIAN'S PATENT.)

U. S. STANDARD.

A Sure Protection against Fraud.

LENGTH, 9 INCHES.



POSITION OF SCALE WHEN COIN IS GENUINE.



POSITION OF SCALE WHEN COIN IS COUNTERFEIT.

The simplest, best and most reliable in the market. Being less complicated, and not liable to get out of order, it is far superior to all others.

It is a perfect scale, and weighs with the nicest accuracy, and gives the exact thickness and diameter of all the principal U. S. Gold and Silver Coins, viz.: the silver dollar, quarter and half dollar; also the \$20, \$10, \$5, \$3, \$2 and \$1 gold coins, thus detecting the counterfeit at once. No person can be defrauded who uses this detector. It is constructed on scientific principles, yet so simple that all can understand it at a glance, and no handling can affect its action. It is manufactured of brass, heavily nickel plated, highly finished, and is a perfect gem, worth four times its cost. It is indispensable to all handling gold and silver coins, an article of real merit and warranted accurate. No person in business can afford to be without it.

DIRECTIONS.—Place the scale on a level surface, and insert the coin in the slot in the beam corresponding with the denomination of the coin to be tested. If the beam falls it is good as to weight, then pass the coin to the corresponding cross slot, if the coin passes through it is good. If the coin does not stand the tests it is worthless.

To test the weight of a Gold Dollar place a 25-cent coin in the \$5.00 gold cross or measuring slot, and lay the gold dollar against it in front, if good the scale will fall.

N. B.—Old United States Gold and Silver coins are larger in diameter than those of more recent coinage, particularly silver half dollars from 1836 to 1850, therefore, though weighing correctly, will not pass through the measuring slots. Do not reject them on this account.

Will send sample in neat box, by mail, upon receipt of price, \$1.00.

ADDRESS,

THOMPSON PATENTS
[CHP. IV : SEC. 3]
[IV-3-3]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

FACE OF A SHEET FROM THE BOX OF
JOHN CHATILLON & SONS, NEW YORK,
CONTAINING THE DEVICE

CHATILLON'S

GOLD AND SILVER

COUNTERFEIT COIN DETECTOR,

(BERRIAN'S PATENT.)

SIMPLEST, CHEAPEST AND BEST.



Impossible to Detect Counterfeit without the Aid of a Detector.

MADE ON SCIENTIFIC PRINCIPLES.

The large amount of counterfeit United States coin in circulation (some two millions of dollars), besides the great number of genuine gold pieces made fraudulent by boring or splitting on the edge, abstracting the gold, then replacing with baser metal and remilling to conceal evidence of such manipulation; and also by the process of sweating, which is accomplished by the aid of the electro-plating machine; by both of which means and various other methods, *two dollars* worth of gold can be extracted from a *Ten dollar* piece and filled with inferior metal without any diminution in size; but of course are deficient in weight, and can be detected only by the use of scales having both weighing and measuring slots carefully adjusted to each other, thus showing the slightest deviation in both size and weight. The Berrian Patent Counterfeit Coin Detector possesses all the requirements referred to and no bank or merchant should be without one. They have earned for themselves many testimonials from banks and merchants all over the United States for the efficacy which is claimed for them.

An article universally needed by all Banks, Storekeepers and others handling gold or silver coins; it is made of brass, heavily nickel plated, elegantly finished and warranted accurate. It cannot get out of order, as there are no pivots or intricate mechanism. In detecting counterfeit Coins a child can use it as well as an expert with equal safety. Owing to the formation of the Detector they can be packed in boxes of one dozen each, measuring ten inches in length, three inches in width and one inch in depth, thus making the package convenient for agents to canvass with.

Will be mailed to any address on receipt of price, \$1.00.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

(Instructions in box for combined coin tester and letter weigher)

BERRIAN MANUFACTURING CO.'S

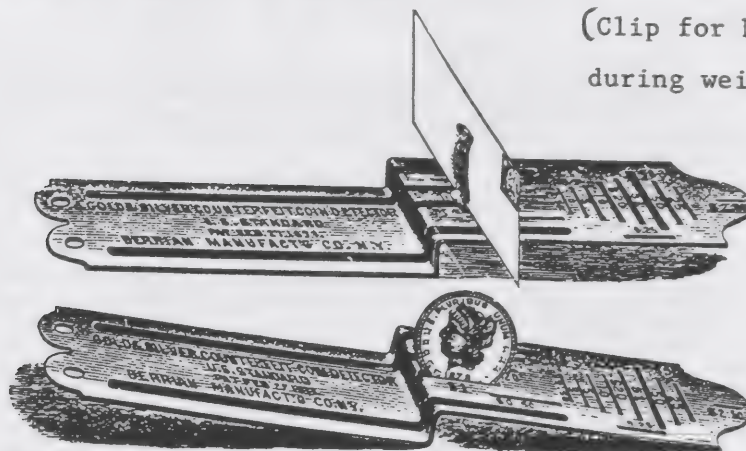
PATENT GOLD AND SILVER COUNTERFEIT

COIN DETECTOR AND LETTER SCALE COMBINED,
SIMPLEST, CHEAPEST AND BEST.



An article universally needed by all Banks, Storekeepers and others handling gold or silver coin, it is made of brass, heavily nickle plated, elegantly finished, and warranted accurate. It cannot get out of order, as there are no pivots or intricate mechanism and both in detecting counterfeit Coins and weighing Letters, a child can use it as well as an expert with equal safety. Owing to the formation of the Detector they can be packed in boxes of one dozen each, measuring ten inches in length, three inches in width and one inch in depth, thus making the package convenient for agents to canvass with.

(Clip for holding letters
during weighing is shown)



Place the Attachment in the dollar slot of the scale, and press the sides into the hollow near the base with the thumb and finger, which will allow it to go into the slot easily, then turn it half way around and insert the letter as shown in the above cut. The attachment can be moved backward and forward as desired, the centre points being the indicators, and when immediately over the mark on each side of the slot, will indicate the amount of postage required; if on the half oz mark and the letter does not weigh down the scale, but one stamp is required, and so on according to weight indicated; the rate being one stamp for every half ounce.

Liberal Discount to Agents and the Trade.

Since the reduction in postage the letter weights are seldom called for.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

JOHN H. THOMPSON Pat. No. 224,807

Feb. 24, 1880

TYPE: Rocker

DESCRIPTION

Very thin, nickel plated, brass strip, bent down at the sides and with a rib down the top to add stability to the metal. Device is six and one half ($6 \frac{1}{2}$) inches (16.51 cm.) long, one and one half ($1 \frac{1}{2}$) inches (3.81 cm.) wide and stands one half ($\frac{1}{2}$) inch (1.27 cm.) above a level surface on its two fulcrums which are integral with the bent sides. The top on one side of one of the fulcrums is slotted for 50, 1 D silver, 20 D and for 10 D. The other side is slotted for, 10, 25, silver and 1 D, $2 \frac{1}{2}$ D and 5 D gold. The slots are "wedged" shaped and will measure the thickness and diameter of the coin in question. A coin of proper weight will cause the device to tip on one of its fulcrums depending upon the location of the coin on the device. Stamp-ed on the top of the device is the inscription ---THOMPSON'S INSTANTANEOUS COUNTERFEIT DETECTOR PAT. APL. 3. 77 IMPROVED JAN. 5. 78. There is no record of a January 5, 1878 patent to indicate what the "improvement" was. The patent for this device is noted as February 24, 1880 in the Patent Office files.

BOX

Rectangular cardboard box with name of *J.A. Thompson, Patentee and Manufacturer* on the cover and instruction on the use of the detector on the inside.

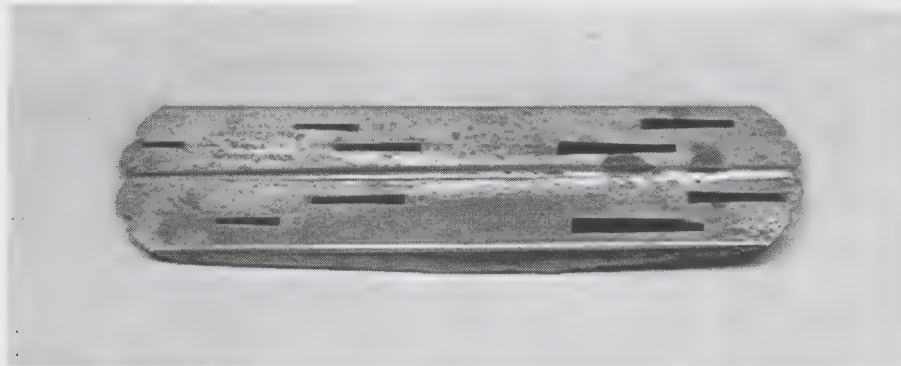
NOTE:

This is the third of John Thompson's patents. His second patent dated April 3, 1877 had been reported but not confirmed.

DESCRIPTION OF KNOWN COUNTERFEIT COIN DETECTING MECHANISMS

JOHN H. THOMPSON Pat. No. 224,807 Feb. 24, 1880

The slots in this counterfeit coin detector are "wedge shaped" rather than rectangular. In his patent application, Thompson indicated that he made the slots in that manner to insure that the coin placed therein would have a tendency to set the weight of the coin forward towards the fulcrum and thus insure proper operation of the device.



HAVE THE DETECTOR IN SIGHT, Shoppers of counterfeit coin will not attempt to pass their spurious productions to a child-fancier, as a man when they see the Detector on your counter, show-case or shelf.

The U. S. Government Counterfeit Coin Detector.

Weights and measures every U. S. Coin from a silver dime to a twenty dollar gold piece, and detects a counterfeit instantly.

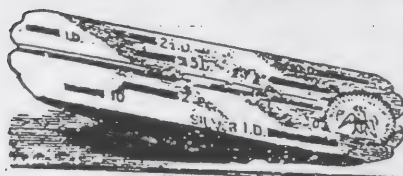
PRICE, \$1.00

Sent prepaid to any address on receipt of price.

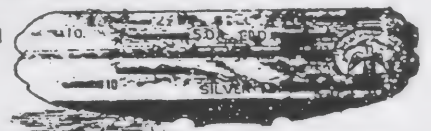
J. A. THOMPSON, Patentee and Manufacturer.

277 E. Madison Street,

CHICAGO, ILL.

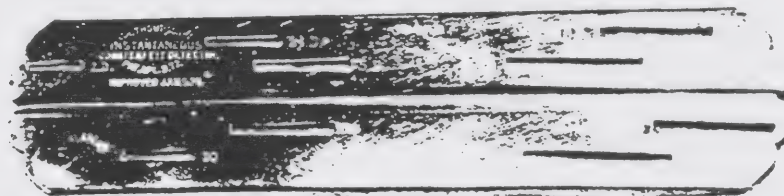


Position when the Coin is Genuine.



Position when the Coin is Spurious.

(Directions in this Case)



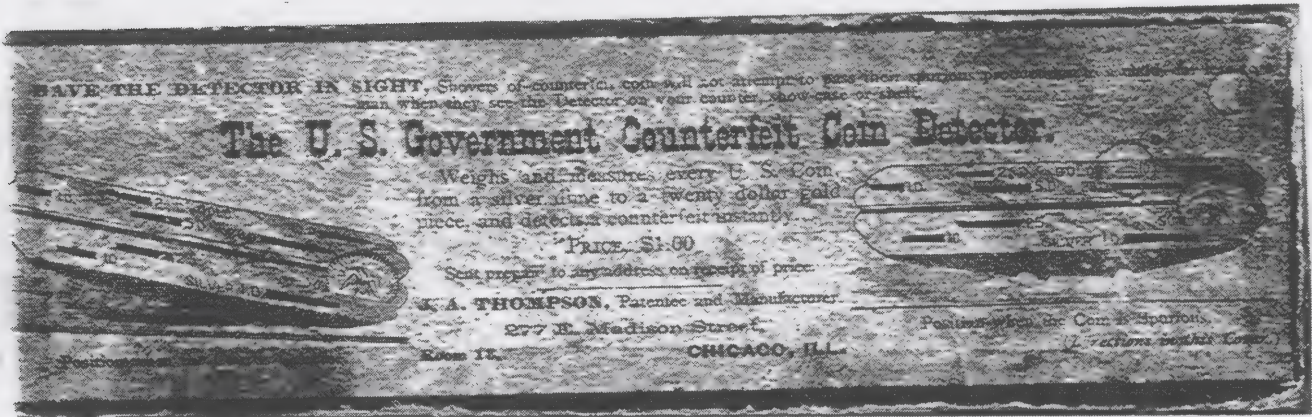
THOMPSON PATENTS
[CHP. IV : SEC. 3]
[IV-3-7]

DESCRIPTION OF KNOWN COUNTERFEIT COIN DETECTING MECHANISMS

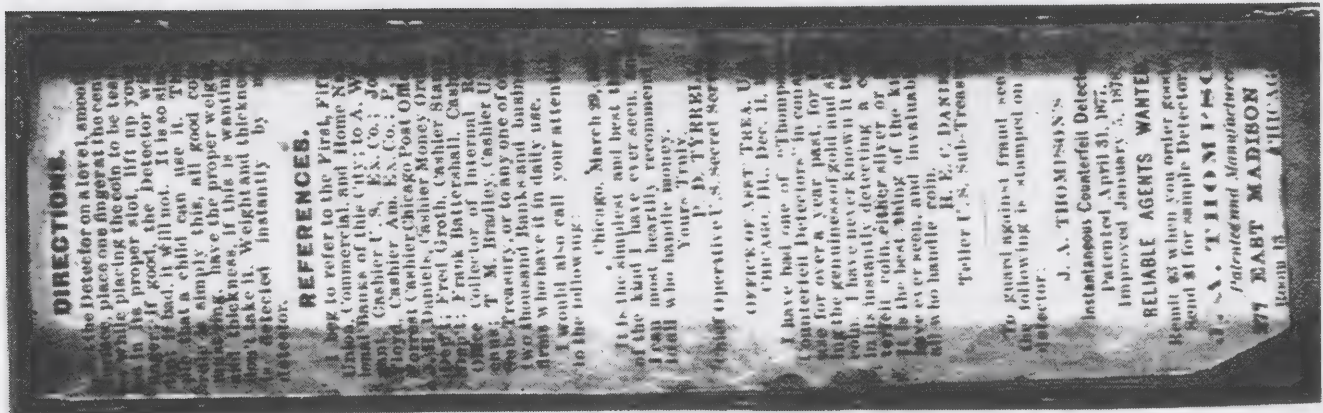
JOHN H. THOMPSON Pat. No. 224,807

Feb. 24, 1880

TOP OF THE BOX



INSIDE OF THE TOP OF BOX



THOMPSON PATENTS
[CHP. IV : SEC. 3]
[IV-3-8]

CHAPTER IV

DESCRIPTION OF KNOWN COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 4

A - MARANVILLE

Harvey Maranville, of Clinton, Ohio, had three patents issued to him for counterfeit coin detectors. His first was issued on January 13, 1857, number 16,390 and was the fourth patent for such a device issued by the Patent Office. Maranville's first detector was a rocker with a sliding beam attached to a pan to hold the coins. His second detector patent issued on February 14, 1860, number 27,140 was also a rocker and consisted of a single brass plate with a fulcrum that was integral with the plate. The third patent issued on April 30, 1878, number 203,057 was a very sophisticated device that used the principle of an excentric rotating counterweight.

HARVEY MARANVILLE Pat. No. 16,390 Jan. 13, 1857

TYPE: Rocker (Sliding Beam)

DESCRIPTION

Brass, sheet metal pan and fixed arm with a sliding arm that slides into the fixed arm. The sliding arm is marked into four columns with incremental markings to weigh foreign gold and silver coins on two columns and United States gold and silver coins on the remaining two columns. The pan on the fixed arm has graduated notches on the raised edges to measure the thickness of the coin. Partial circles on the face of the pan indicate the diameter of the coin in question. The device sits on a small metal base that forms the bearing points of the knife edges on the fixed arm.

This detector was stamped on the reverse side of the long arm *MADE BY C. E. STAPLES, Worcester, Mass. and H. MARANVILLE'S PATENT JAN 12. 1857 CLINTON O.* The device in its closed position measures $3 \frac{1}{4}$ inches (83 MM) in length and $4 \frac{3}{4}$ inches (120 MM.) when fully extended to weigh a \$20 U. S. gold coin. The beam is 1 inch (25 MM) wide and the pan which holds the coins is circular, with a diameter of $1 \frac{7}{8}$ inches (48 MM).

BOX

There is, currently no known box for this device.

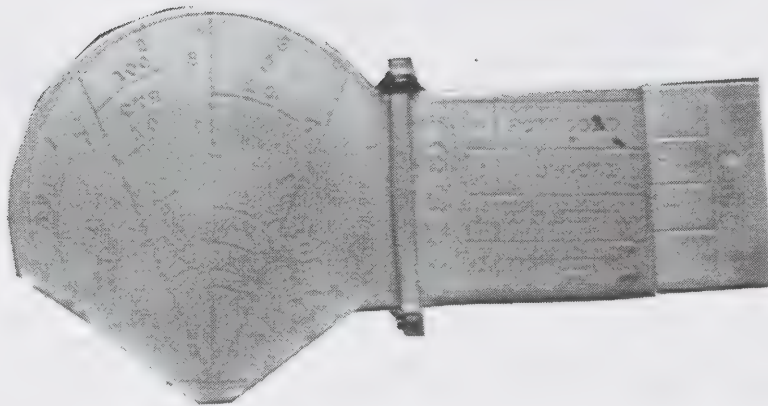
MARANVILLE PATENTS
[CHP. IV : SEC. 4]
[IV-4-1]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

HARVEY MARANVILLE Pat. No. 16,390 Jan. 13, 1857

Let us test or examine a 50 cent piece: Move the dial to the right with thumb and finger so that the mark 50 is at index. Place the coin on face at left side so that the edge touches lip. Lined up, it will balance as genuine. Should it appear to be larger than usual you may test the size (diameter and thickness). On left end are two scales, one side for gold and the other for silver coin, which will be readily understood. The thickness will vary in coin, owing to milling at edge. It should be tried in about three places and it will average about the mark for each coin. measure a worn by handling will measure a trifle less. The danger is coin measuring larger than scale indicates. The jingle should be tried in doubtful pieces which is always good for genuine coin. All other pieces gold and silver are tested in the same way.

MARANVILLE DEVICE FOR
PATENT NO. 16,390

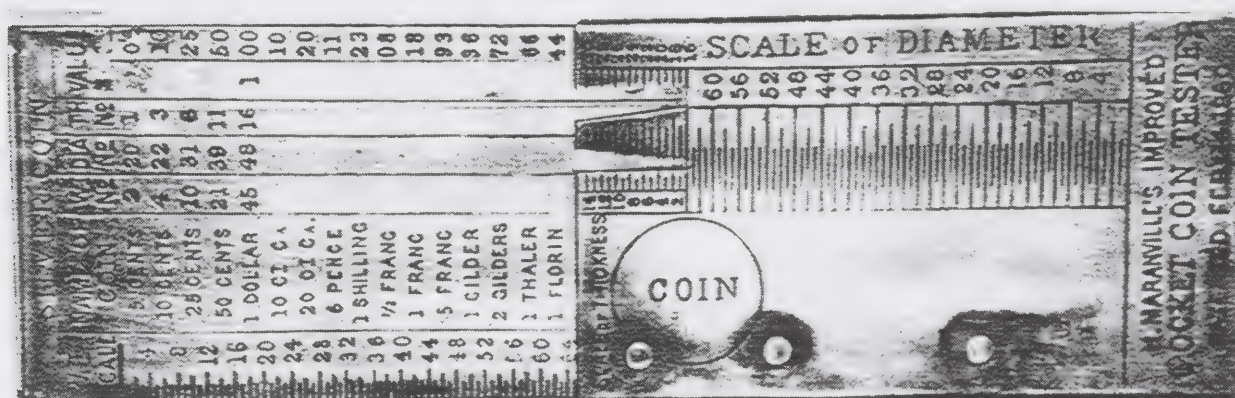


DESCRIPTION OF KNOWN COUNTERFEIT COIN DETECTING MECHANISMS

The second counterfeit coin detector patent was issued to H. Maranville on February 14, 1860, Patent Office No. 27,140.

Sheet brass, steelyard type, rectangular, telescopic counter weight, sliding in and out of the body of the device. The device is marked along the left side with a scale of reference numbers for the weight. Across the rest of the face is a list of coins with weight reference numbers, diameters and thickness plus the value in U. S. money. Listed on the face are silver coins of the U. S. and several European countries. By turning the slide over, the weight reference numbers for U.S. and several European gold coins are available for checking weight.

MARANVILLE DEVICE FOR
PATENT NO. 27,140



The third of Harvey Maranville's patents, was patent number 203,057 and was issued for a combined Postal Scale and Counterfeit Coin Detector but no such device is known to the authors.

HARVEY MARANVILLE Pat. No. 203,057 Apr. 30, 1879

TYPE: Rocker (Movable Counterweight)

DESCRIPTION

Flat nickel plated brass plate with integral knife edges that rotate about a metal posts set on a metal base. Raised edge on one side has markings to indicate the diameter of all United States silver and gold coins then current. The same side has notches in varying depths to gauge the thickness of the coin. The counterweight end has a revolving disk with the counterweight attached. This weight is moved to a predetermined position to weigh specific coins. Overall length of the device is three and one half ($3\frac{1}{2}$) inches (8.90 cm.) long and two and three eights ($2\frac{3}{8}$) inches (6.03 cm.) wide.

MARANVILLE PATENTS
[CHP. IV : SEC. 4]
[IV-4-3]

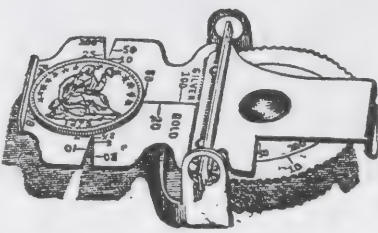
DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

BOX: Plain black boxes contain the following instructions as how to use the device:

Let us test or examine a 50 cent piece. Move the dial to the right with thumb and finger so that the mark 50 is at index. Place the coin on the face at left so that the edge touches the lip. Lined up, and it will balance as genuine. Should it appear to be larger than usual you may test the size (diameter and thickness). On left end are two scales, one side for gold and the other for silver coin, which will be readily understood. The thickness will vary in coin, owing to milling at edge. It should be tried in about three places and it will average about the mark set for each coin. Coin worn by handling will measure a trifle less. The danger is in coin measuring larger than the scale indicates. The jingle should be tried in doubtful pieces which is always good in genuine coin. All other pieces of gold and silver are tested in the same way.



ADVERTISEMENT FROM AMERICAN BANK REPORTER

| | | |
|-----------------------|---|--|
| PRICE, \$1.00. |  | <p style="text-align: center;">DIAL COIN TESTER.</p> <p>One of the most perfect and exact instruments for Detecting Counterfeit Coin in the World. FULL DIRECTIONS FOR USE SENT WITH EACH TESTER.</p> <p style="text-align: center;">The American Bank Reporter, 27 PARK PLACE, - P. O. BOX 411, N. Y.</p> |
|-----------------------|---|--|

(See II-2A-7 et seq.)

MARANVILLE PATENTS
[CHP. IV : SEC. 4]
[IV-4-4]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 4

B - HERPERS

FERDINAND J. HERPERS Pat. No. 18,937 December 29, 1857

TYPE: Rocker (Fulcrum Above Beam)

DESCRIPTION

Polished brass scale with a plate slotted to receive coins and a beam with a sliding counterweight. Beam and plate are about five and one half inches ($5 \frac{1}{2}$) (19.98 cm.) long. Plate is two and one quarter inches ($2 \frac{1}{4}$) (5.72 cm.) long and one and one quarter ($1 \frac{1}{4}$) inches (3.18 cm.) wide at its wide end tapering down to one half ($\frac{1}{2}$) inch (12.70 cm.) at the narrow end. The plate is slotted to receive the gold coins then current, e.g. 20, 10, 5, 3, 2.50 and 1 coin in both its smaller and larger version. In addition, the plate will accept silver coins of the one half dollar and dollar size. All of the slots have a width and thickness to allow for the insertion of the appropriate coin if the coin is genuine. A spurious coin would not fit the designated slots or if it did fit, then the weighing lever would not indicate a genuine coin. The beam is calibrated with notches at the appropriate places for the particular denomination of the coin being weighed. The plate and beam are mounted on a cast iron base having four legs at the corners. The brass plate is clearly marked *F. HERPERS NEWARK, N.J. PATENTED DEC. 29th, 1857*

BOX: None known.

NOTE:

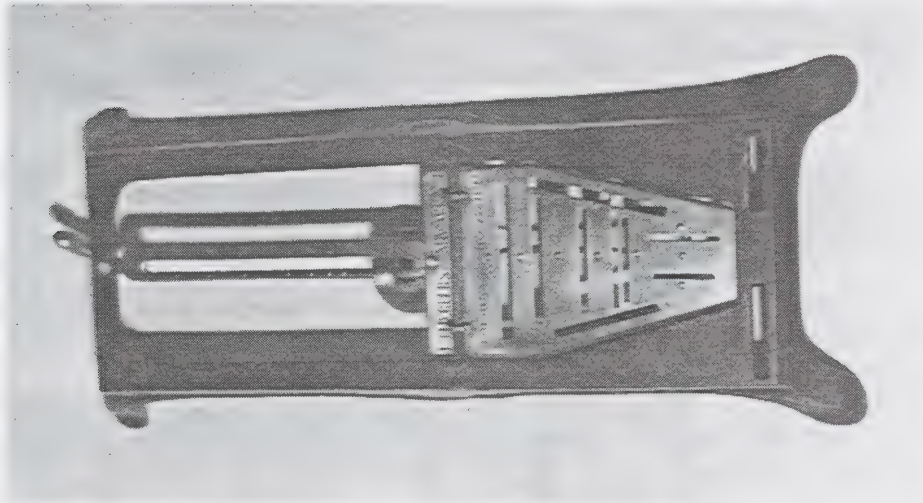
There is no question that this is a Herper's patent at it is clearly so marked. However, there is very little resemblance of this model to the model indicated in the Letters Patent. This is another example of giving a patent for one design and then having something different placed on the market.

(For more see II-2A-3 et seq.)

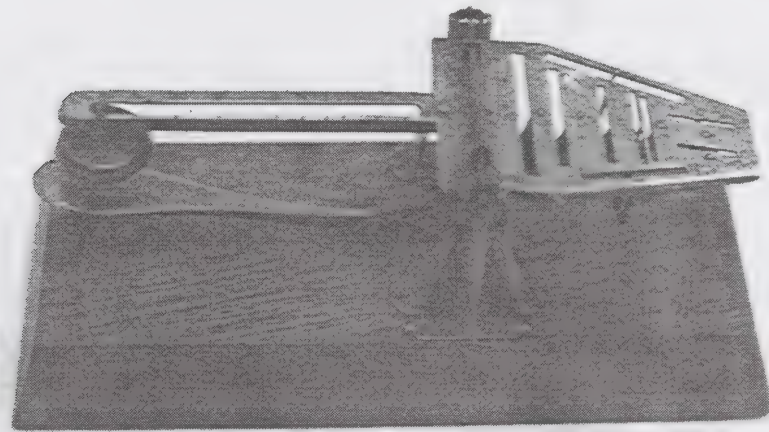
DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

FERDINAND J. HERPERS Pat. No. 18,937 December 29, 1857

(Courtesy of William Doniger,



(Courtesy of Betty Wright)



HERPERS PATENT
[CHP. IV : SEC. 4]
[IV-4-6]

HERPERS' PATENT COUNTERFEIT COIN DETECTOR.

This instrument is warranted by the undersigned — to detect all imitations of U. S. Coins from 25 Cents to \$20 both inclusive.

REFER TO

Saint Nicholas Bank, Wall St., New York.

State Bank, Newark, N. J.

DIRECTIONS FOR TESTING COINS: Place the coin in the slit marked with its value, and the weight of the notch marked with the same value, then turn the swivel to release the beam (this swivel has only to support the beam, when the scale is not used).

If the balance remains in a level with the frame the coin is good but very much worn, consequently a new genuine coin will considerably overbalance the weight — should the weight overbalance the coin, or should the slit not admit the coin, the coin can not be genuine.

The slits are so adjusted as to admit genuine coins to be measured on their largest diameter.

It is necessary to test the toughness of silver coins also, there being bad quarters in circulation made of an alloy of lead and mercury, which alloy is as heavy as silver but very brittle.

To enable tender fingers to break such pieces, the frame has been provided with slits in which such coins can be broken with ease, whereas a genuine quarter hardly can be bent. — Price \$1.50.

F. J. HERPERS, Patentee & Manufacturer, Newark, N. J.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 4

C - SUTTON

JOHN W. SUTTON Pat. No. 188,892 March 27, 1877

TYPE: Rocker (10-25-50 cent detector)

DESCRIPTION

Round, nickel plated brass plate, three thirty seconds ($3/32$) inches (2.38 mm.) thick, one and one half ($1 \frac{1}{2}$) inches (38 mm.) in diameter with three (3) slots around the perimeter and three wedge shaped holes within the plate. On the face of the plate are three (3) concentric circles equal in diameter to the diameter of a United States ten cent, twenty-five cent and fifty cent coin. This device would only weigh and gauge the ten, twenty-five and fifty cent pieces of the United States current at that time. The slots to retain the coins are marked respectively, 10, 25 and 50. The width of each slot would determine the thickness of the coin. The diameter was measured against the proper concentric ring engraved on the surface of the device. A pen knife edge was inserted in the proper wedge shaped hole to act as a fulcrum. A coin of proper weight would cause the device to rotate clockwise. The detector is marked PAT'D APR.27.77.

TYPE: Rocker (25-50-\$1 detector)

DESCRIPTION

Round, nickel plated brass plate, three thirty seconds ($3/32$) inches (2.38 mm.) thick, one and thirteen sixteenths ($1 \frac{13}{16}$) inches (46 mm) in diameter with three (3) slots around the perimeter and three wedge shaped holes within the plate. On the face of the plate are three (3) concentric circles equal in diameter to the diameter of a United States twenty five, fifty cent, and one dollar coin. This device would only weigh and gauge the twenty-five, fifty cent and one dollar coins of the United States current at that time. The slots to retain the coins are marked respectively, 25, 50 and 1.00. The width of each slot would determine the thickness of the coin. The diameter was measured against the proper concentric ring engraved on the surface of the device. A pen knife edge was inserted in the proper wedge shaped hole to act as a fulcrum. A coin of proper weight would cause the device to rotate clockwise. The detector is marked PAT'D APR.27.77.

BOX: No box known for either model.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

JOHN W. SUTTON

Pat. No. 188,892 March 27, 1877

NOTE:

One of the most unusual and very rare American Coin Detectors. Less than a dozen are known to exist.

Refer to the appendix for a detailed drawings of these models.

SUTTON DETECTOR



(For more see II-2A-18 et seq.)

SUTTON PATENT
[CHP. IV : SEC. 4]
[IV-4-8]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 4

D - KRONENBERG

EDWARD KRONENBERG

Patent No. 195,452

DATE: Sept. 28, 1877

TYPE: Rocker

DESCRIPTION

Cast iron box with base 3 7/8" long and 7/8" wide, narrowing to 3 5/8" and 7/16" above. The brass top is bevelled at the edges but otherwise flat and its ends fold over the cast iron base. The top has two thin gauges in longitudinal position, the 50 cent slot being in the center and the 25 cent slot being at the back. The coins drop through the slots in a vertical position on to a rocker within the box and will roll through if the proper weight. In raised cast letters on the right side are KRONENBERG PATENT in two lines and in raised cast letters on the left side are US in ligature with the S reversed and COIN DETECTOR. The front and back sides of the iron box are open. The spindle for the rocker is riveted through the sides of the box. Only one example of this type is known.

Box: None.

TYPE: Rocker

DESCRIPTION

Cast iron box much wider than the foregoing type, being 4 1/4" long, 2" wide and 2" high with a brass top soldered thereto. The top has two circular cut out openings to receive United States 25 cent and 50 cent pieces horizontally and two small slots, each the width of the coin in question. Inside the box is a rocker to receive a coin. A coin of proper weight will trip the rocker and allow the coin to slide through. Stamped on the top are the words PAT. APP'D FOR, COIN DETECTOR and a U superimposed on a reversed S.

Box: None

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 4

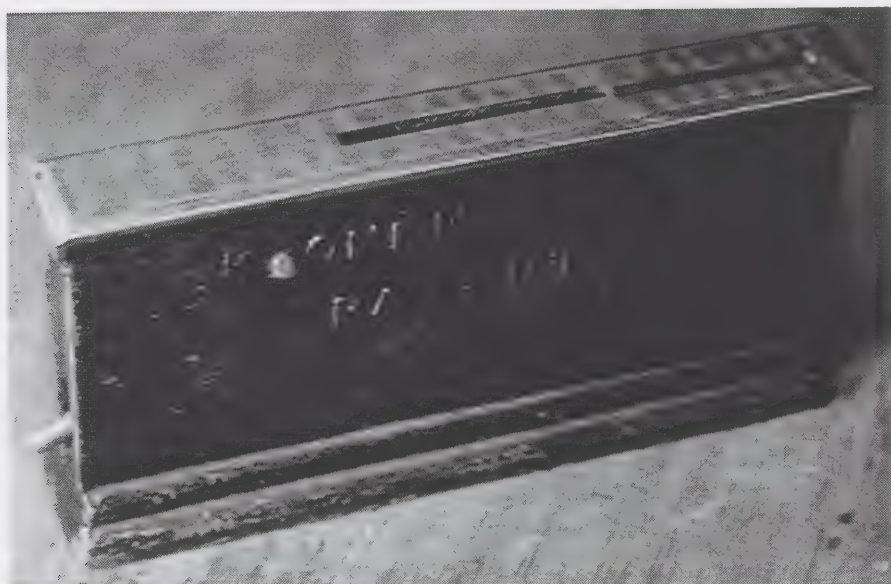
D - KRONENBERG

EDWARD KRONENBERG

Patent No. 195,452

DATE: Sept. 28, 1877

KRONENBERG PATENT
(Newman Collection)



KRONENBERG PATENT APPLIED FOR
(Mallis Collection)



KRONENBERG PATENT
[CHP. IV : SEC. 4]
[IV-4-10]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 4

E - HOAG

GEORGE HOAG Pat. No. 216,184 June 3, 1879

TYPE: Steelyard (Plate Above Beams)

DESCRIPTION

TYPE I: Coin Tester and Postage Weight Scale

Polished brass, twin, unequal arm beams. The longer postal arm is 10" (254 mm) long with a large heavy movable counterweight. The shorter coin weighing arm, $6\frac{1}{4}$ " long (160 mm.), is attached to the longer postal arm with two brass separators, one at each end. The shorter beam is marked at predetermined locations to weigh gold and silver coins of the United States then current. The longer, postal beam is marked off from zero to $9\frac{1}{2}$ ounces, in one quarter ounce increments, for use in determining weights for postal items. Steel knife edges inserted in the beam engage two upright posts that are part of the twin circle oval cast iron base and are the bearing points of the beam. The multi-colored cast iron base has the word *FAIRBANKS* raised in a curved line on each side. The base and the vertical uprights are painted black and with red and gold, floral decorations including a fancy painted *FAIRBANKS* at the rear of the base. The brass plate, set above the beam, has 10 slot gauges to receive 10, 25, 50 and 1 Dollar silver coins and the 1, 2 $\frac{1}{2}$, 3, 5, 10 and 20 Dollar gold coins. The end of the coin arm is marked *GOLD SILVER* in two lines, on both sides and *PAT'D JUNE 3, 1879* in two lines on the postal beam. The end of the long postal arm behind the fulcrum point has a threaded tang with two round, knurled adjustment nuts on the threaded base end of the beam to adjust the scale for equilibrium.

TYPE II: Coin Tester and Postage Weight Scale

Cast iron, painted, rectangular base with a leaf design on all uprights and one raised *FAIRBANKS* in a straight line on the outside end of the base. Patent date of *PAT'D JUNE 3, 1879* in two lines. Otherwise same as TYPE I.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 4

E - HOAG

GEORGE HOAG Pat. No. 216,184 June 3, 1879

TYPE: Steelyard (Plate Above Beams)

DESCRIPTION

TYPE III: Coin Tester and Postage Weight Scale

Brass platform with 9 slot gauges parallel to the beam to hold 10, 25, 50 cents and 1 dollar silver coins plus $2\frac{1}{4}$, 3, 5, 10 and 20 dollar gold coins. Beam carries appropriate denominational markings for each coin. *PAT'D FEB 26, 1895* is on the beam directly under the platform. The stem under the arms of the platform support has a cast iron cap over an opening for lead shot to be used to achieve initial equilibrium. The cap also has a volcano type top to prevent the secondary fulcrum from displacement. Otherwise, the same as TYPE II.

TYPE IV: Coin Tester

Polished brass, unequal arm beam, eight and three quarter ($8\frac{3}{4}$) inches (222 mm). long with small movable counterweight on the long arm. The beam is marked at predetermined locations to weigh gold and silver coins of the United States then current. Steel knife edges inserted in the beam engage two upright posts that are part of the rectangular cast iron base and are the bearing points of the beam. The cast iron base has the word *FAIRBANKS* cast therein, and is painted black and with red and gold stripes. The brass plate, set above the beam, has 9 slot gauges to receive 10, 25, 50 and 1 Dollar silver coins and $2\frac{1}{2}$, 3, 5, 10 and 20 Dollar gold coins. The end of the long arm is marked *FAIRBANKS GOLD SILVER* in two lines on one side and *FAIRBANKS GOLD SILVER* in three lines on the other. There are no threads on the base end of the beam end nor are there any adjusting nuts. There is a cap over a lead shot receptacle as in TYPE III. Heavy wire prong restrictor to limit the upward movement of the platform end of the beam. There is a small hole at the end of the long arm into which can be inserted a small weight, pin or wire to adjust the scale for equilibrium.

NOTE:

Type I is the exact design that appears on the GEORGE HOAG patent of June 3, 1879.

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

GEORGE HOAG Pat. No. 216,184

June 3, 1879

NOTE - continued

This particular, Type II model, with a different type base, was still being manufactured by FAIRBANKS as late as 1901 as evidenced by the Scale Catalogue advertisement hereafter illustrated.

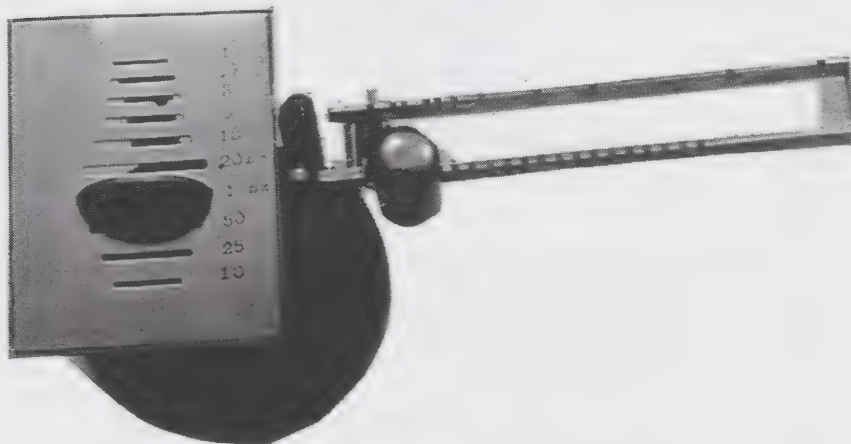
Although the TYPE IV scale is marked FAIRBANKS, it is GEORGE HOAG'S patent that was used in its construction even though HOAG'S patent was for a combination postal and coin detector with twin beams.

This particular example shown, has been altered by some prior user to allow it to be used for postage by inscribing on the beam locations that correspond to ounces.

John Chatillon & Sons, of New York City also made and marketed a Postal and Coin Scale based upon the George Hoag patent but using the 1901 base shown in the FAIRBANKS catalogue. Probably this was done under license from Hoag. There is included herewith an illustration of the Chatillon model and a copy of a page of their scale catalogue showing the Postal and Coin Scale.

The photographs of the various HOAG type detectors shown herein are from the collections of the authors.

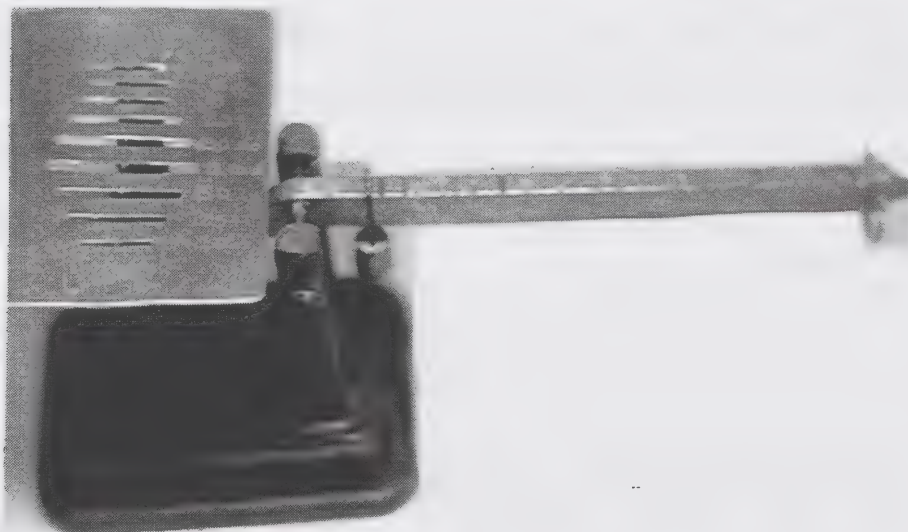
(Original Patented Design)



HOAG PATENT
[CHP. IV : SEC. 4]
[IV-4-13]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS
GEORGE HOAG Pat. No. 216,184 June 3, 1879

(Counterfeit coin detector with one beam. In the device pictured someone modified the beam with notches to weigh letters)

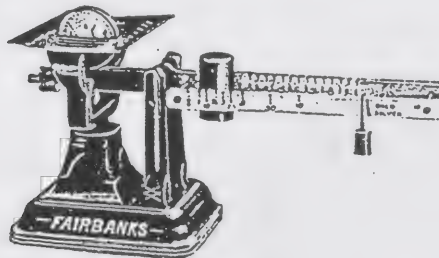


ILLUSTRATED PRICE LIST OF FAIRBANKS STANDARD SCALES: 1901

Manufactured By E. & T. FAIRBANKS & CO..

ST. JOHNSBURY VERMONT U.S.A.

Postal and Coin Scale.



Postal and Coin.

For description of ordinary Postal Scales, see following page.
The Postal and Coin Scales above illustrated are for United States Coin only. The slots in the pan determine the diameter and thickness of genuine coins, and by use of the "Coin" beam the weight of the coin is given. Thus the three necessary requirements—weight, diameter and thickness—are shown. The main beam may be used for weighing ordinary postal matter. Scales are furnished with Coin Beam only when so ordered.

| No. | Capacity, Ounces. | Price, Brass. | Price, Nickel Plated. |
|---------------------------|----------------------|------------------|-----------------------------|
| 601. Postal..... | 9 x 1/2 | \$3.00 | \$5.00 |
| 613. " | 16 x 1/2 | 4.00 | 6.00 |
| 604. " | 34 x 1/2 | 6.00 | 8.50 |
| 617. Coin only | 9 x 1/2 | 4.00 | 6.00 |
| 618. Postal and Coin..... | 9 x 1/2 | 5.00 | 7.00 |

527

HOAG PATENT
[CHP. IV : SEC. 4]
[IV-4-14]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

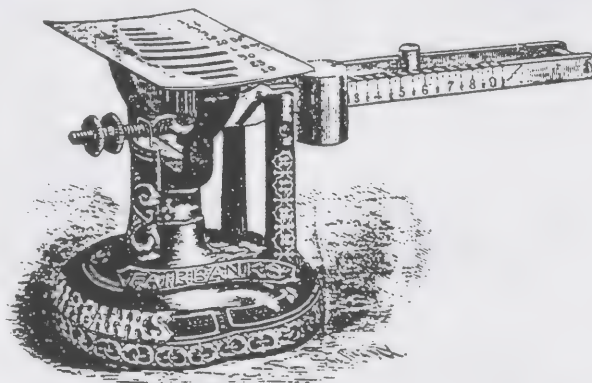
GEORGE HOAG Pat. No. 216,184

June 3, 1879

THE POSTAL COIN SCALE
UNITED STATES GOVERNMENT STANDARD
UNDERWOOD REPORTER CO., NOV. 1883

THE
Postal Coin Scale.

UNITED STATES GOVERNMENT STANDARD.



INDISPENSABLE TO ALL BANKERS AND BROKERS.

Gives Weight, Diameter, and Thickness of all Gold and
Silver Coins.

MANUFACTURED BY FAIRBANKS & CO.

SENT PREPAID TO ANY ADDRESS IN THE UNITED STATES ON
RECEIPT OF \$5.

Make Drafts, Checks, or Money Orders payable to and address
the special agents,

UNDERWOOD REPORTER CO.,
18 Spruce St., New York City.
P. O. BOX 2,624.

HOAG PATENT
[CHP. IV : SEC. 4]
[IV-4-15]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

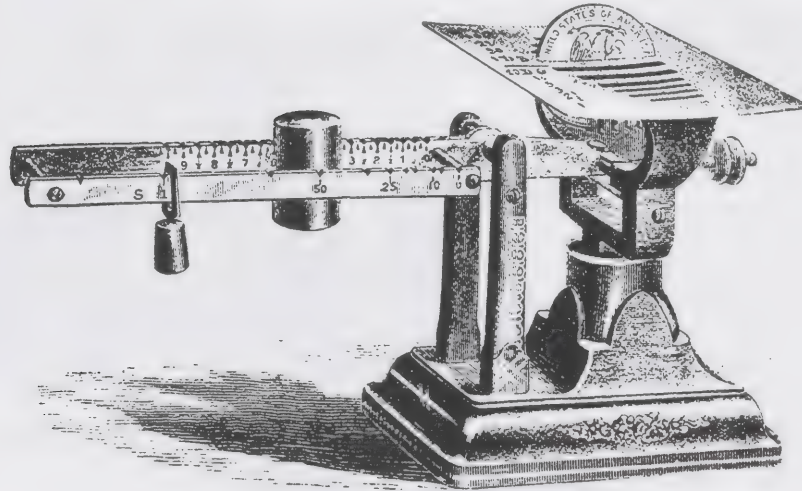
GEORGE HOAG Pat. No. 216,184 June 3, 1879

FROM CHATILLON CATALOGUE

16

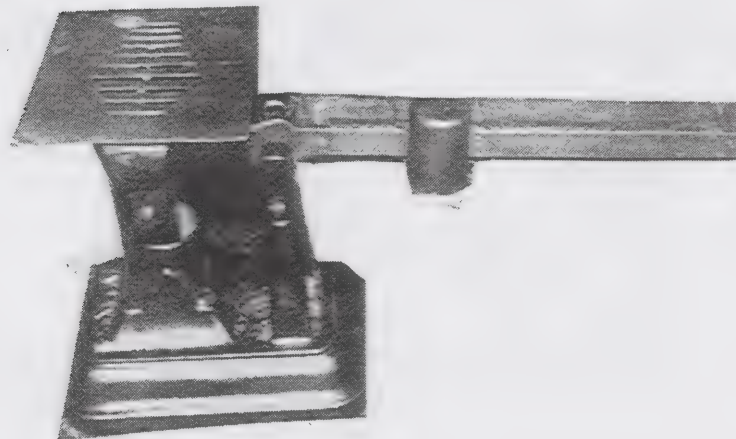
JOHN CHATILLON & SONS, NEW YORK.

POSTAL AND COIN SCALES.



The slots shown in the cut determine the diameter and thickness of the genuine coins, and by use of the "coin" beam the exact weight of the genuine coin is given, the beam being notched and stamped with the denomination of each coin: thus the three necessary requirements—weight, diameter and thickness are shown. For postage, it has a capacity of $\frac{1}{4}$ to $9\frac{1}{2}$ ozs.

| | | |
|---|-------|--------|
| No. 618, | each, | \$5 00 |
| No. 617, with single beam, for coin only, | " | 4 00 |



HOAG PATENT
[CHP. IV : SEC. 4]
[IV-4-16]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 4

F - CLARKE

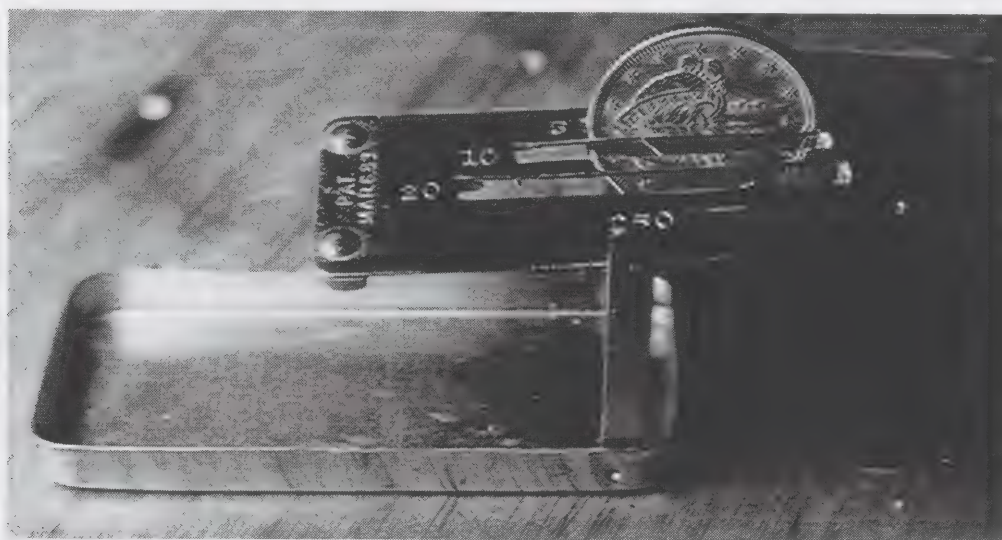
MERRITT CLARKE Pat. No. 273,667 March 6, 1883

TYPE: Rocker

DESCRIPTION

This is a very small light weight detector easily carried in a purse or pocket, being only $2\frac{1}{2}$ " in length, 1" in width and $\frac{7}{16}$ " in height when closed. It is contained in a thin nickel-plated brass box in which the overhanging lip of the top which is stamped *Clarke's Coin Tester - U. S. Standard* fits snugly over the bottom. Within the box are two nickel-plated brass rockers, one for inserting U. S. gold coins and one for inserting U. S. silver coins plus a 5 cent nickel. Each rocker has a separate thin slot for each denomination to drop a coin in vertically until it is caught by bent over prongs below. The rocker is held up by a separate U shaped support which fits into and snaps onto dimples in each side of the end of the bottom. The rocker has tiny projections for a fulcrum and they fit into a hold in the U support. The top of the box is used as a bottom for the other rocker. One rocker folds on its fulcrum bearing into the top and the other into the bottom. The rockers are punched with *PAT MAR 6 83*. The beams arms are unequal but light in weight and the counterweight is partly created by the slots being cut so that an appropriate portion of each coin falls over the fulcrum line, making a percentage of the weight of the coin constitute its own counterweight.

This seems to be the only coin detector for the U. S. 5 cent nickel.



CLARKE PATENT
[CHP. IV : SEC. 4]
[IV-4-17]

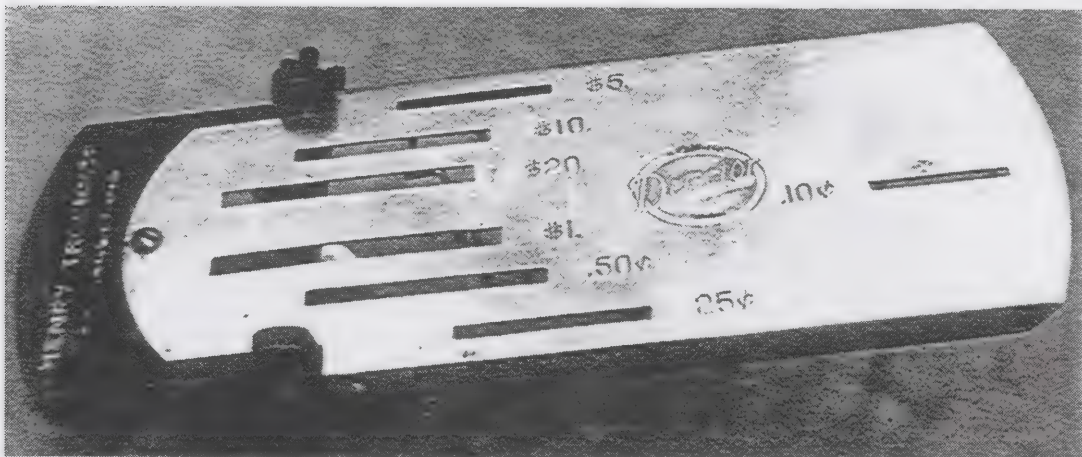
DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

MERRITT CLARKE Pat. No. 273,667 March 6, 1883

CLOSE-UP OF OVAL MARKING
(Courtesy of Betty Wright)

A 20th Century adaptation using the same principles as provided in the patent was made for countertop use. It has an iron stand with two fulcrum notches. The beam is 5 3/8 inches long and 2 3/4 inches wide. The device has a height of 1 1/2 inches.

The example shown indicates it was made by Henry Troemner of Philadelphia and is marked *U. S. STANDARD DETECTOR*, in an oval stamping into the balance plate, with *U.S. Currency* in tiny letters in the oval border of the stamping. In addition *HENRY TROEMNER PHILADELPHIA* also appears on the end of the device. This adoption of the Clarke patent is found in a boxed set of detection equipment for coins and paper and was sold by *U. S. CURRENCY DETECTOR, INC.*, of New York City circa 1921. That detector set contained a calibrated glass plate for paper money, chemicals for testing metal, a rubber stamp for stamping counterfeit paper money and the Troemner counterfeit coin detector, along with instructions printed on a brass plate inside of the lid of the wooden box.



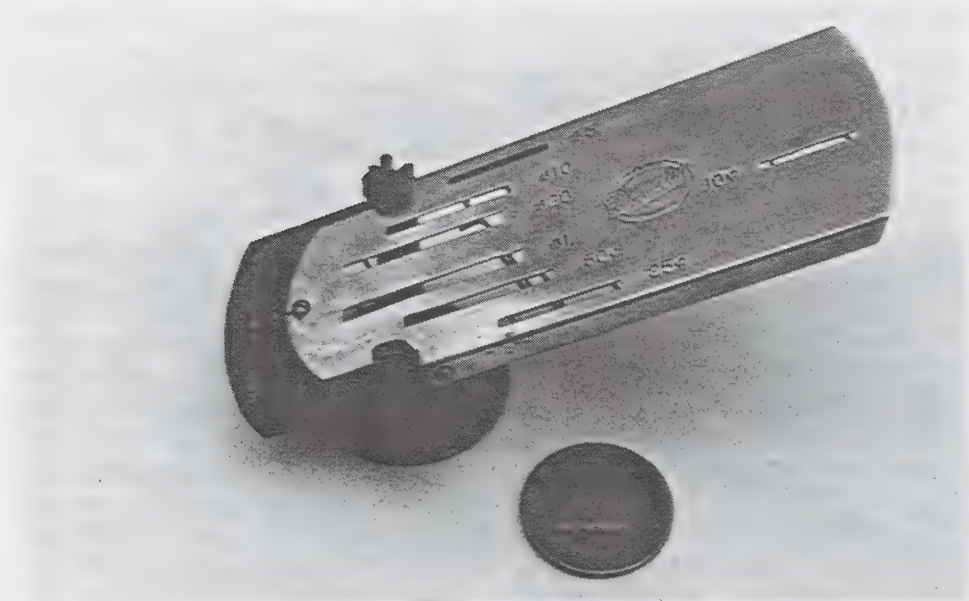
CLARKE PATENT
[CHP. IV : SEC. 4]

[IV-4-18]

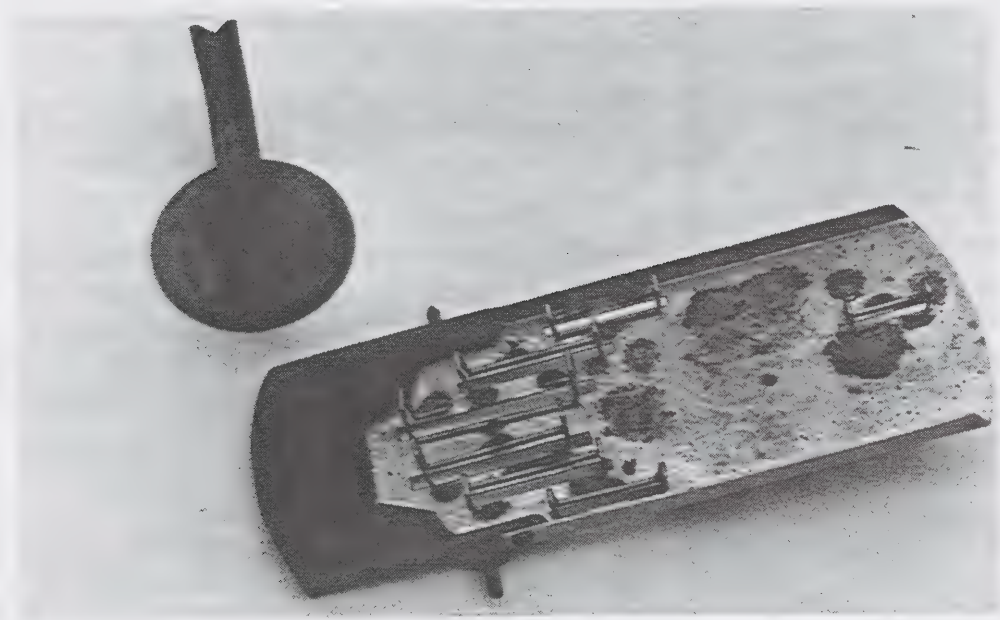
DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

MERRITT CLARKE Pat. No. 273,667 March 6, 1883

(Courtesy of Barbara Folger)



BASE AND UNDERSIDE OF DETECTOR



CLARKE PATENT
[CHP. IV : SEC. 4]

[IV-4-19]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 4

G - BRAGIN

LEOPOLD BRAGIN PATENT NO. 1,531,642 MARCH 31, 1925

TYPE: Rocker (Plate Under Fulcrum)

DESCRIPTION

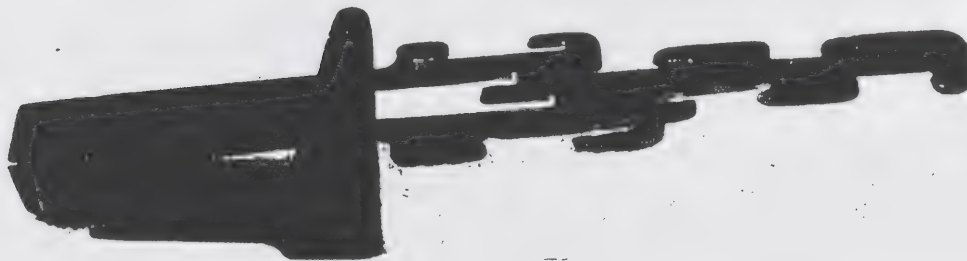
Brass unequal arm beam, five and one half ($5 \frac{1}{2}$) inches (200 mm.) long with a fixed counterweight at the end of the short arm. Width of the longer arm is one and one eighth ($1 \frac{1}{8}$) inches (29 mm.) and has a series of toothed slots along each edge, marked 20, 10, 5, 3 and $2 \frac{1}{2}$ and 1 for gold coins and the 1, 50 and 25 for silver pieces. Each slot gauge is of the proper width and thickness to accept only genuine coins. Device is pivoted on two upright arms attached to the base.

BOX: None

If a coin is genuine but underweight, the rocker will not tilt, indicating this shortage. If the coin is counterfeit and of the proper weight, such a coin would not fit the slots.

There is no indication on the device to indicate either the patent number or who patented the item. The device is exactly the same as indicated on the Patent to Leopold Bragin, as indicated in the above description.

(Courtesy of William Doniger)



BRAGIN PATENT
[CHP. IV : SEC. 4]
[IV-4-20]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

SECTION 4

H - HANSEN

MARIUS H. HANSEN PATENT NO. VARIOUS VARIOUS DATES

TYPE: Tension Spring Scale

DESCRIPTION

Upright scale with a backward slanted dial face, activated, tension spring device and with a zinc coated, metal pan for the reception of the bulk cents. Over all height of the device is ten (10) inches (250 mm.). Round dial face, six and one half ($6\frac{1}{2}$) inches (165 mm.) in diameter and graduated in dollars with five cent increments to fifteen (\$15.00) dollars. Coin pan is six (6) inches (152 mm.) square and two (2) inches (50 mm.) deep and rests on a five and one half ($5\frac{1}{2}$) inch (140 mm.) square platform set onto a vertical rod that descends when loaded to activate the dial mechanism. The dial can be set to zero by an adjusting screw on top of the scale housing.

The dial face is labeled *HANSON VSA MODEL 1527 PENNY COUNTER* along with the words *COVERED BY ONE OR MORE OF THE FOLLOWING PATENTS* (eight patent dates listed and the words *COPYRIGHT 1931 BY HANSON SCALE COMPANY*.

BOX

The scale is housed in a press board box with a drop front side that has a latching device and a cover with a carrying handle and the catch to engage the side latching device and secure the box.

Marius H. Hansen, of the Hanson Bros. Scale Co. of Chicago, Illinois during the period 1917 to 1929 patented several scale mechanisms. All of these were based upon the principle of the tension of a spring. Among these was a mechanism to weigh bulk cents in a pan, and obtain from the dial the monetary value of the lot. Range of the dial goes from 0 to \$15.00 in 5 cent increments. The basic patent is dated August 28, 1928, NO. 1,682,506 and was assigned to *HANSON BROTHERS SCALE COMPANY* of Chicago.

While the patentee was Marius H. HANSEN, of Chicago and the patent was assigned to the *HANSON BROTHERS SCALE COMPANY*, of Chicago would lead one to believe that for business reasons *HANSON* was used for the company name instead of *HENSEN* and there was not an error.

There is also a Hanson penny and nickel counter calibrated to weigh pennies up to a value of \$7.50 and nickels up to a value of \$23.65.

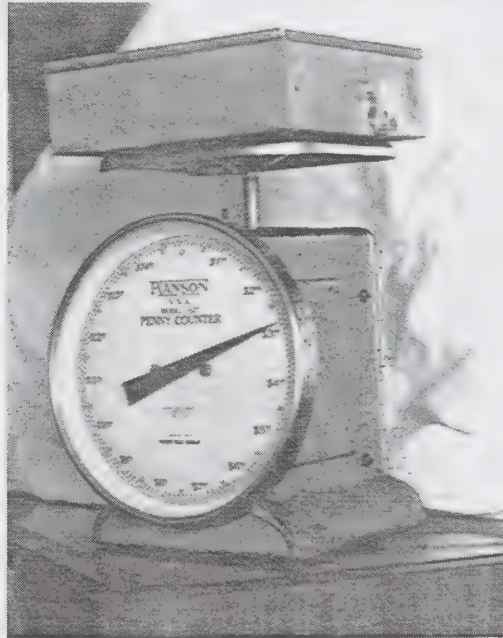
HANSEN PATENT
[CHP. IV : SEC. 4]

[IV-4-21]

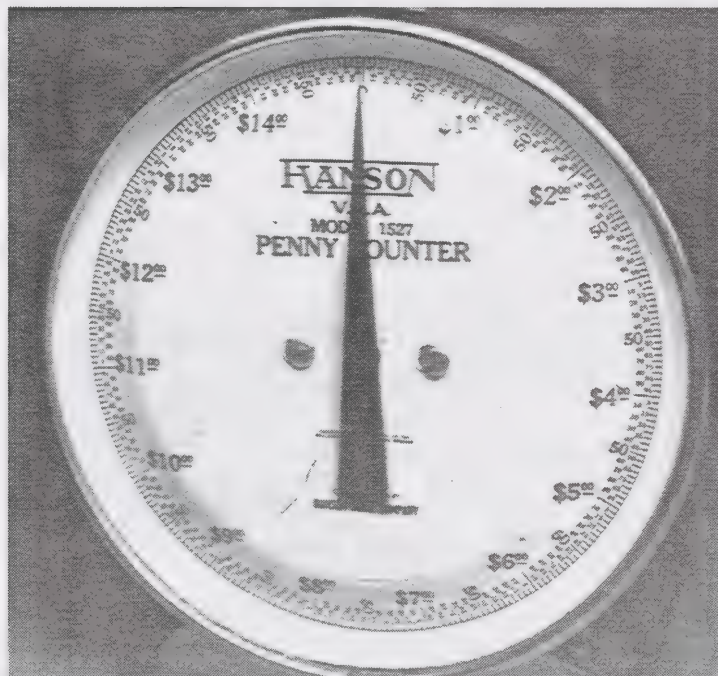
DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

MARIUS H. HANSEN PATENT NO. VARIOUS VARIOUS DATES

PENNY COUNTER
(Hanson Scale Company Model)



ENLARGED FACE



HANSEN PATENT
[CHP. IV : SEC. 4]

[IV-4-22]

DESCRIPTION OF KNOWN
COUNTERFEIT COIN DETECTING MECHANISMS

MARIUS H. HANSEN PATENT NO. VARIOUS VARIOUS DATES

There is a similar penny and nickel counting scale made by *CHATILLON* that is calibrated to record up to \$10.00 in cents and \$30.00 in nickels. The cent calibrations are in black while the nickel calibrations are in red.

The construction and design is virtually the same as the *HANSON SCALE COMPANY* model except that the upper plate holding the weighing pan is circular with a diameter of six (6) inches (152 mm.)

The dial, is seven (7) inches (178 mm.) in diameter, indicates that this scale was manufactured especially for *J. SCHOENBACH, BROOKLYN, N.Y.* by *JOHN CHATILLON & SONS, NEW YORK, N.Y.* The dial is vertical instead of leaning backwards.

(Chatillon Scale)



HANSEN PATENT
[CHP. IV : SEC. 4]
[IV-4-23]

CHAPTER V

KNOWN MANUFACTURERS OF AMERICAN COIN SCALES & COUNTERFEIT COIN DETECTING MECHANISMS

| MANUFACTURER | LOCATION | DEVICE | PATENTEE |
|-----------------------------------|-----------------------|---|------------------------|
| Abbot Machine Co. | Chicago, IL. | C.C.D. | McNally |
| Berrian Mfg. Co. | New York, N.Y. | C.C.D. | 1st. Thompson |
| Brown, J. L. & Co. | New York, N.Y. | Equal Arm Balance Scales | |
| Burnet, J.H. | New York, N.Y. | C.C.D. & Letter Weigher | |
| Chatillon, John & Sons | New York, N.Y. | C.C.D. | Hoag Double beam |
| | | C.C.D. | 1st. Thompson |
| Clarke, M. | Poultney, Vt. | | M. Clarke |
| Cyrani, A. | New York, N.Y. | Equal Arm Balance Scale | |
| Dakin, Jonathan | Boston | Equal Arm Balance Scale | |
| Fairbanks & Brown | Boston, MA. | Banker's Scales | |
| Fairbanks, E and T & Company | St. Johnsbury, VT. | C.C.D. | Hoag, Single beam |
| | | C.C.D. | McNally |
| | | C.C.D. & Postal Scale | |
| | | | Hoag Double Beam |
| | | Equal Arm Balance Scales | |
| Fairbanks & Co. | Boston, MA. | C.C.D. | McNally |
| Fairbanks Infallible Scale Co. | Baltimore, MD. | C.C.D. | McNally |
| Hanson Scale Co. | Chicago, IL. | Bulk Penny (Cent) Scale | |
| Herper's, F. J. | Newark, N.J. | CCD | Herper's |
| M. B. Coin Scale Co. | Milwaukee, WI. | C.C.D. | McNally |
| Plumly, George | Phila., PA. | Equal Arm Balance Scale & Coin Weights (Colonial Era) | |
| Seymour, C. W. | New York, N.Y. | CCD, | Seymour, (no patent) |
| Staples, C. E. | Worcester, MA. | C.C.D. | 1st. Maranville |
| Thompson, J. A. | Chicago, IL. | C.C.D. | (3rd. Thompson Patent) |
| Troemner, Henry(*) | Phila., PA. | C.C.D. | Clarke |
| | | Equal Arm Balance Scales | |
| | | C.C.D. | 1st. Thompson |
| Wilson, I. | New London, CT. | C.C.D. | Allender |

CHAPTER VI

GLOSSARY OF TERMS

BISMAR

An equal arm scale beam with a fixed location for the counterweight, a fixed location for the load and a movable fulcrum.

COIN SCALE

A weighing device designed specifically to weigh gold and/or silver coins, bullion or gold dust.

COUNTERFEIT COIN

Any coin not produced under the governmental Authority issuing the coin.

COUNTERFEIT COIN DETECTOR MECHANISM

A device capable of determining whether a coin is genuine or counterfeit, usually having the ability to determine its weight, diameter and thickness by mechanical means. In early United States Patent Office, *Letters Patent*, the term *DETECTOR* is often used but this spelling is not and has not been an accepted English usage.

COUNTER BALANCE

See COUNTERWEIGHT

COUNTER POISE

See COUNTERWEIGHT

COUNTERWEIGHT

Sometimes referred to as a counter poise or counter balance. A weight, either movable or fixed, placed at one end of scale in order to obtain a balance with the load on the opposite end.

CURRENT WEIGHT

The weight of a coin as established by the governmental authority issuing the coin.

CURRENT VALUE

The legal value of a coin as established by the Governmental Authority issuing the coin.

GLOSSARY OF TERMS - continued

DETECTOR

See COUNTERFEIT COIN DETECTOR MECHANISM

EQUAL ARM BALANCE SCALE

A beam on which the two end pivots are an equal distance from the fulcrum.

FULCRUM

The main point or pivot about which a beam rotates. This point may be equally distant from the ends as in an equal arm balance scale, or anywhere in between in the case of an unequal arm balance scale such as a steelyard or bismar.

MECHANICAL MECHANISM

Any device that relies solely on the principles of mechanics to achieve its purpose without recourse to any electrical or electronic assistance.

KNIFE EDGE

A pivot made in the shape or form of a very sharp upright edge, usually made of steel or a hard mineral such as agate, on which a beam can rotate.

NOTCH

A groove or "V-cut" made on the edge of a beam with numbers or graduations at the points in question in the case of a specific type of scale, or a series of notches uniformly graduated in the case of a general weighing scale.

SCALE BEAM

A beam used in a weighing apparatus that has units of weight or other descriptive designations noted thereon to indicate.

STEELYARD

A weighing device in which the location of the fulcrum and the location of the object to be weighed are at a fixed point on the beam. The counterweight, located on the other side of the beam is movable along the beam to achieve equilibrium. In the case of a limited weighing device such as a rocker scale, the fulcrum and load positions are fixed and the counterpoise is prefixed at a given location to effect equilibrium.

CHAPTER VII

SELECTED BIBLIOGRAPHY ON METROLOGY

SECTION A

- Adams. John Quincy. Report upon Weights and Measures. Prepared in obedience to a Resolution of the Senate of the third March. 1817. Washington, 1821.
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None listed

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APPENDIX A

SUMMARY OF PATENTS FOR COIN SCALES AND COUNTERFEIT COIN DETECTING MECHANISMS (Arranged in Order of Patent Date)

| NO. | TITLE | PATENTEE | PAT. NO. | DATE |
|-----|--|------------------|----------|----------------|
| 1 | Coin Scale & Detector | H. G. Robinson | 9,844 | July 12, 1853 |
| 2 | Coin Tester | G. B. Smith | 9,997 | Sept. 6, 1853 |
| 3 | Coin Tester | J. Allender | 13,840 | Nov. 27, 1855 |
| 4 | Coin Tester | H. Maranville | 16,390 | Jan. 13, 1857 |
| 5 | Counterfeit Coin Detector | F. J. Herper | 18,973 | Dec. 29, 1857 |
| 6 | Coin Detector | H. Maranville | 27,140 | Feb. 14, 1860 |
| 7 | Counterfeit Coin Detector | W. Painter | 35,834 | July 8, 1862 |
| 8 | Coin & Letter Scale | D. Cummings, Jr. | 39,890 | Sept. 15, 1863 |
| 9 | Scale for Weighing Coins | W. Schmolz | 156,259 | Oct. 27, 1874 |
| 10 | Coin Scales | H. S. Cochran | 161,098 | Mar. 23, 1875 |
| 11 | Coin Counter | A. Bernstein | 183,383 | Oct. 31, 1876 |
| 12 | Detector of Counterfeit Coin | J. A. Thompson | 187,936 | Feb. 27, 1877 |
| 13 | Device for Detecting Counterfeit Coin | T. J. Towsey | 187,937 | Feb. 27, 1877 |
| 14 | Coin Tester | G. M. Hopkins | 188,637 | Mar. 20, 1877 |
| 15 | Counterfeit Coin Detector | J. Wiarda | 188,712 | Mar. 20, 1877 |
| 16 | Counterfeit Coin Detector | J. W. Sutton | 188,892 | Mar. 27, 1877 |
| 17 | Counterfeit Coin Detector | J. A. Thompson | 189,284 | April 3, 1877 |
| 18 | Coin Detector | P. Doherty | 192,241 | June 18, 1877 |
| 19 | Counterfeit Coin Detector | E. Kronenberg | 194,451 | Sept. 25, 1877 |
| 20 | Counterfeit Coin Detector | W. H. Rice | 196,168 | Oct. 16, 1877 |
| 21 | Device For Receiving and Coin and Detecting Counterfeit Coin | J. W. Meaker | 200,080 | Feb. 5, 1877 |
| 22 | Device for Detecting Counterfeit Coin | A. J. Baker | 202,691 | Apr. 23, 1878 |
| | | J. W. Simonton | | |
| 23 | Postal Scale and Count- erfeit Coin Detector | H. Maranville | 203,057 | Apr. 30, 1878 |

APPENDIX A

SUMMARY OF PATENTS FOR COIN SCALES AND COUNTERFEIT COIN DETECTING MECHANISMS (Arranged in Order of Patent Dates)

| NO. | TITLE | PATENTEE | PAT. NO. | DATE |
|-----|---|--------------------------|-----------|----------------|
| 24 | Counterfeit Coin Detector and Coin Receiver | S. A. Field | 203,719 | May 14, 1878 |
| 25 | Coin Tester | S. A. Lueders | 205,492 | July 2, 1878 |
| 26 | Counterfeit Coin Detector | E. Street | 209,145 | Oct. 22, 1878 |
| 27 | Combined Scale and Coin Tester | G. Hoag | 216,184 | June 3, 1879 |
| 28 | Counterfeit Coin Detector | J. A. Thompson | 224,807 | Feb. 24, 1880 |
| 29 | Scales | J. T. McNally | | |
| | | W. H. Harrison | D12,795 | Feb. 28, 1882 |
| 30 | Coin Tester & Indicator | G. Smith and J. J. Wells | 259,338 | June 13, 1882 |
| 31 | Counterfeit Coin Detector | J. B. Atwater | 264,431 | Sept. 19, 1882 |
| 32 | Coin Tester | M. Clarke | 273,667 | Mar. 6, 1883 |
| 33 | Coin Detector | E. Bachman | 285,204 | Sept. 18, 1883 |
| 34 | Combined Letter Scale and Coin Tester | E. C. Purnelle | 292,763 | Jan. 20, 1884 |
| 35 | Coin and Letter Scale | C. Richtmann | 295,809 | Mar. 25, 1884 |
| 36 | Coin Counter and Tester | W. W. Haas | 314,330 | Mar. 24, 1885 |
| 37 | Letter Scale and Coin Tester | E. Knight | 288,138 | Aug. 21, 1888 |
| 38 | Combined Pencil Holder Eraser Holder, and Coin Tester | R. W. Riess | 549,534 | Nov. 12, 1895 |
| 39 | Coin Tester | T. I. Porter | 645,185 | Mar. 13, 1900 |
| 40 | Coin Testing Machine | M. D. Stadler | 867,304 | Oct. 1, 1907 |
| 41 | Spurious Coin Detector | L. Bragin | 1,531,642 | July 6, 1925 |
| 42 | Count Checking Device for Packaged Coins | F. E. Finch | 1,903,621 | Apr. 11, 1933 |
| 43 | Coin Tester | W. H. Parnell | 2,350,414 | June 6, 1944 |

APPENDIX B

SUMMARY OF THE NAMES OF PATENTEES OF COIN SCALES AND COUNTERFEIT COIN DETECTING MECHANISMS (Arranged in Alphabetical Order)

| NAME OF PATENTEE | TITLE OF LETTERS PATENT (Title of Patent Drawing) | PATENT NO. | DATE |
|---------------------|--|------------|---------------|
| ALLENDER, JOHN | BALANCE FOR DETECTING SPURIOUS COINS (Coin Tester) | 13,840 | NOV. 27, 1855 |
| ATWATER, JOHN, B. | COUNTERFEIT-COIN DETECTOR (Counterfeit Coin Detector) | 264,431 | SEPT 19, 1882 |
| BACHMANN, EMIL, | COIN-DETECTOR (Coin Detector) | 285,204 | SEPT 18, 1883 |
| BAKER, AARON, J. | IMPROVEMENT IN DEVICES FOR DETECTING COUNTERFEIT COIN (Device For Detecting Counterfeit Coin) | 202,691 | APR. 23, 1878 |
| BERNSTEIN, ARON, | IMPROVEMENT IN COIN- COUNTERS (Coin-Counters) | 183,833 | OCT. 31, 1876 |
| BRAGIN, LEOPOLD | SPURIOUS COIN DETECTOR (Spurious Coin Detector) | 1,531,642 | JULY 6, 1923 |
| CLARKE, MERRITT | COIN TESTER (Coin Tester) | 273,667 | MAR. 6, 1883 |
| COCHRAN, HENRY, S. | IMPROVEMENT IN COIN-SCALES (Coin-Scales) | 161,098 | MAR. 23, 1875 |
| CUMMING, DAVID, Jr. | IMPROVEMENT IN COIN AND LETTER SCALES (Coin and Letter Scale) | 39,990 | SEPT 16, 1863 |
| DOHERTY, PATRICK, | IMPROVEMENT IN COIN- DETECTERS (Coin-Detector) | 192,241 | JUNE 19, 1877 |

APPENDIX B

SUMMARY OF THE NAMES OF PATENTEES OF COIN SCALES AND COUNTERFEIT COIN DETECTING MECHANISMS (Arranged in Alphabetical Order)

| NAME OF PATENTEE | TITLE OF LETTERS PATENT (Title of Patent Drawing) | PATENT NO. | DATE |
|---------------------|--|------------|---------------|
| FIELD, SAMUEL, A. | IMPROVEMENT IN COUNTERFEIT -COIN DETECTOR AND COIN- RECEIVER (Counterfeit Coin Detector and Coin Receiver) | 203,719 | MAY 14, 1878 |
| FINCH, FRED, E. | COUNT CHECKING DEVICE FOR PACKAGED COINS (Count Checking Device For Packaged Coins) | 1,903,621 | MAY 17, 1930 |
| HAAS, WILLIAM, H. | COIN COUNTER AND TESTER (Coin Counter and Tester) | 314,330 | MAR. 24, 1885 |
| HARRISON, WALTER, | DESIGN FOR SCALES (Scales) | D12,795 | FEB. 28. 1882 |
| HERPERS, F. J. | BALANCE FOR DETECTING COUNTERFEIT MONEY (Counterfeit Coin Detector) | 18,973 | DEC. 29, 1857 |
| HOAG, GEORGE | IMPROVEMENT IN COMBINED SCALE AND COIN-TESTER (Combined Scale and Coin Tester) | 216,184 | JUNE 3, 1879 |
| HOPKINS, GEORGE, M. | IMPROVEMENT IN COIN-TESTERS (Coin Tester) | 188,637 | MAR. 20. 1877 |
| KNIGHT, EDGAR | LETTER-SCALE AND COIN-TESTER (Letter Scale and Coin Tester) | 388,138 | AUG. 21, 1888 |
| KRONENBERG, EDWARD | IMPROVEMENT IN COUNTERFEIT- COIN DETECTERS (Counterfeit Coin Detectors) | 195,451 | SEPT 25, 1877 |
| LUEDERS, EMIL | IMPROVEMENT IN COIN-TESTERS (Coin-Tester) | 205,492 | JULY 2, 1878 |

APPENDIX B

SUMMARY OF THE NAMES OF PATENTEES OF COIN SCALES AND COUNTERFEIT COIN DETECTING MECHANISMS (Arranged in Alphabetical Order)

| NAME OF PATENTEE | TITLE OF LETTERS PATENT (Title of Patent Drawing) | PATENT NO. | DATE |
|----------------------|---|------------|---------------|
| MARANVILLE, H. | BALANCE FOR DETECTING COUNTERFEIT COINS (Coin Tester) | 16,390 | JAN. 13, 1857 |
| | COIN-DETECTOR (Coin Detector) | 27,140 | FEB. 14, 1860 |
| | IMPROVEMENT IN POSTAL-SCALE AND COUNTERFEIT-COIN DETECTOR (Postal Scale and Counter- feit-Coin Detector) | 203,057 | APR. 30, 1878 |
| MCNALLY, JAMES, T. | DESIGN FOR SCALES (Scales) | D12,795 | FEB. 28, 1882 |
| MEAKER, JOHN, W. | IMPROVEMENT IN DEVICES FOR RECEIVING AND DELIVERING COIN AND DETECTING COUNTERFEIT COIN (Device For Receiving and Delivering Coin and Detect- ing Counterfeit Coin) | 200,080 | FEB. 5, 1878 |
| PAINTER, WILLIAM | IMPROVEMENT IN COUNTERFEIT -COIN DETECTORS (Counterfeit Coin Detector) | 35,834 | JULY 8, 1862 |
| PARNELL, WALTER, H. | COIN TESTER (Coin Tester) | 2,350,414 | JUNE 5, 1941 |
| PORTER, THOMAS, I. | COIN-DETECTOR (Coin Detector) | 645,185 | MAR. 13, 1900 |
| PURNELLE, EDWARD, C. | COMBINED LETTER-SCALE AND COIN-TESTER (Combined Scale and Letter Tester) | 292,763 | JAN. 29, 1884 |

APPENDIX B

SUMMARY OF THE NAMES OF PATENTEES OF COIN SCALES AND COUNTERFEIT COIN DETECTING MECHANISMS (Arranged in Alphabetical Order)

| NAME OF PATENTEE | TITLE OF LETTERS PATENT (Title of Patent Drawing) | PATENT NO. | DATE |
|---------------------|---|------------|---------------|
| RICE, WILLIAM, H. | IMPROVEMENT IN COUNTER- FEIT-COIN DETECTERS (Counterfeit Coin Detector) | 196,168 | OCT. 16, 1877 |
| RICHTMANN, CHARLES | COIN AND LETTER SCALE (Coin and Letter Scale) | 295,809 | MAR. 25, 1884 |
| RIESS, RUDOLPH, W. | COMBINED PENCIL-HOLDER, ERASER-HOLDER, AND COIN- TESTER (Combined Pencil Holder, Eraser Holder, and Coin Tester) | 549,,534 | NOV. 12, 1895 |
| ROBINSON, HENRY, G. | COIN SAFE AND DETECTOR (Balance Scales) | 9,844 | JULY 12, 1853 |
| SCHMOLZ, WILLIAM | IMPROVEMENT IN SCALES FOR WEIGHING COINS (Scales For Weighing Coins) | 156,259 | OCT. 27, 1874 |
| SIMONTON, JOHN, W. | IMPROVEMENT IN DEVICES FOR DETECTING COUNTERFEIT COIN (Device For Detecting Counterfeit Coin) | 202,691 | APR. 23, 1878 |
| SMITH GIDEON, B. | COUNTERFEIT-COIN DETECTOR (Coin Tester) | 9,997 | SEPT 6, 1853 |
| SMITH, GILBERT | COIN TESTER AND INDICATOR (Coin Tester and Indicator) | 259,338 | JUNE 13, 1882 |
| SADTLER, MORGAN, D. | COIN-TESTING MACHINE (Coin Testing Machine) | 667,304 | OCT. 1, 1907 |
| STREET, EDWIN | IMPROVEMENT IN COUNTERFEIT -COIN DETECTERS (Counterfeit Coin Detector) | 209,145 | OCT. 22, 1878 |

APPENDIX B

SUMMARY OF THE NAMES OF PATENTEES OF COIN SCALES AND COUNTERFEIT COIN DETECTING MECHANISMS (Arranged in Alphabetical Order)

| NAME OF PATENTEE | TITLE OF LETTERS PATENT (Title of Patent Drawing) | PATENT NO. | DATE |
|--------------------|--|------------|---------------|
| SUTTON, JOHN, W. | IMPROVEMENT IN COUNTERFEIT -COIN DETECTERS (Counterfeit Coin Detector) | 188,982 | MAR. 27, 1877 |
| THOMPSON, JOHN, A. | IMPROVEMENT IN DETECTERS OF COUNTERFEIT COIN (Detectors of Counterfeit Coin) | 187,936 | FEB. 27, 1877 |
| THOMPSON, JOHN, A. | IMPROVEMENT IN COUNTERFEIT -COIN DETECTERS (counterfeit Coin Detector) | 189,284 | APR. 3, 1877 |
| | COUNTERFEIT COIN DETECTOR (Counterfeit Coin Detector) | 224,807 | FEB. 24, 1880 |
| TOWSEY, THOMAS, J. | IMPROVEMENT IN DEVICES FOR DETECTING COUNTERFEIT COIN (Device For Detecting Counterfeit Coin) | 187,938 | FEB. 27, 1877 |
| WELLS, JOHN, J. | COIN TESTER AND INDICATOR (Coin Tester and Indicator) | 259,338 | JUNE 13, 1882 |
| WIARDA, JOHN | IMPROVEMENT IN COUNTERFEIT -COIN DETECTERS (Counterfeit Coin Detector) | 188,712 | MAR. 20, 1877 |

APPENDIX C

SELECTED DETAILED DRAWINGS OF PATENTS ISSUED OR OF DEVICES WITHOUT KNOWN PATENT DOCUMENTS

Patents when issued by the Patent Office to various inventors did not incorporate in the patent drawings any definitive information such as dimensions, mass (weight) of counterweights or materials. The information on the patent claims and later on the issued patents were merely descriptive of the devices. Often the statement *to enable others skilled in the trade to make, etc.* appears in the documents. Information obtained from patent attorneys practicing today indicates that definitive dimensions are still not required on patent paper applications.

To assist collectors who may need to reproduce some of these devices or portions thereof, the detailed drawings herein contained, were prepared for that purpose. These drawings were developed using the original devices in the possession of the authors and others along with the U. S. Mint records of the weights, dimensions and thicknesses of the various United States gold and silver coins which were used with these mechanical counterfeit coin detectors. The weight (mass) of the counterweights was established by mathematical analysis based upon the principles of statics.

A word of CAUTION to those who may use these detailed drawings to replicate the various items herein contained. It is presently lawful to replicate an antique or a part of it for one's own use. However, such an item requires the reproduction to be stamped with the word *COPY*. The word *COPY* must be stamped into the item itself in proper size and not merely written on it or an attached paper label or tag.

It is hoped that additional detailed drawings of other devices will become available. These, when prepared, will be included either separately or in a revision.

The following are the detailed drawings included in this Appendix:

EXPLODED PLAN OF J. WIARDA COUNTERFEIT COIN DETECTOR
P. DOHERTY COUNTERFEIT COIN DETECTOR
J. A. THOMPSON DESIGN OF APRIL 3, 1877
J. W. SUTTON CCD; PATENTED IMPROVEMENT; JULY 1, '79
McNALLY CCD BELAYING PIN TYPE COUNTERWEIGHT
TROEMNER CCD
FAIRBANKS & EWING CCD
K. & G. HOWARD CCD
CHAS. F. SEYMOUR CCD
MOORE'S PATENT CCD
UNKNOWN MAKER OF CCD AFTER THE GERMAN CCD MANNER
UNKNOWN MAKER OF CCD FOR \$20
ALLENDER PATENT CCD

J. WIARDA: Patent: Mar. 20, 1877
This engineering drawing was made
using the original Patent Office
patent documents:

Engineering drawing
Copyright © 1994
A. GEORGE MALLIS, PE

EXPANDED PLAN VIEW OF DEVICE

EXPANDED PLAN VIEW OF DEVICE

THIS DISTANCE IS 150 MM FOR HALF DOLLAR
AND 100 MM FOR QUARTER DOLLAR

DETAIL OF HULING CLIF3

| | | | |
|----|----|----|----|
| 60 | 70 | 80 | 90 |
|----|----|----|----|

GRAPHIC SCALE

PLAN VIEW
SCALE IN METRIC UNITS

91.00

45.94

16.00

12.09

7.55

27.65

50°

13.58

CLIP FOR QUARTER CLIP FOR HALF

ELEVATION SCALE IN METRIC UNITS

DETAIL AT FULLORUM

ELEVATION
SCALE IN METRIC UNITS

DETAIL AT
FULCRUM

2- COUNTERWEIGHT ON
THREADED ROD WITH HEAD
CROSS SECTION AT
SCREW WITH COUNTERWEIGHT

HOLDING CLIP IN BENT POSITION

6.50

5.00

15.00

PRIOR TO BENDING

CROSS SECTION

THRU HOLDING CLIP

DISTANCE BETWEEN FACES

HALF DOLLAR = 150 MM

QUARTER = 100 MM

CROSS SECTION

IRU HOLDING CLIP
DISTANCE BETWEEN FACES
HALF DOLLAR - 150 mm
QUARTER = 100 mm

DETAILS OF HOLDING CLIP

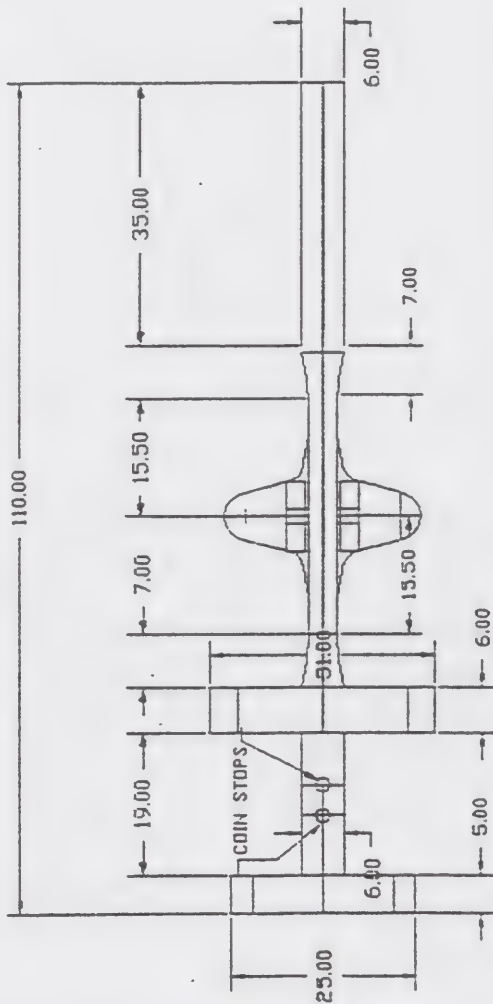
J. WIARDA Patent; Mar. 20, 1877. This engineering drawing was made using the original Patent Office patent documents.

A. GEORGE MALLIS, P.E.
CONSULTING ENGINEER
208 REEDS LANDING
SPRINGFIELD, MA, 01109

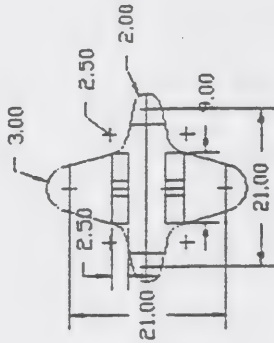
P. DOHERTY Patent; June 19, 1877. This
engineering drawing was made using the
original Patent Office patent documents.

scale 1/4" = 1"
date 1993
drawn
checked

Engineering drawing
Copyright © 1993
A. GEORGE MALLIS, PE



PLAN VIEW OF DETECTOR

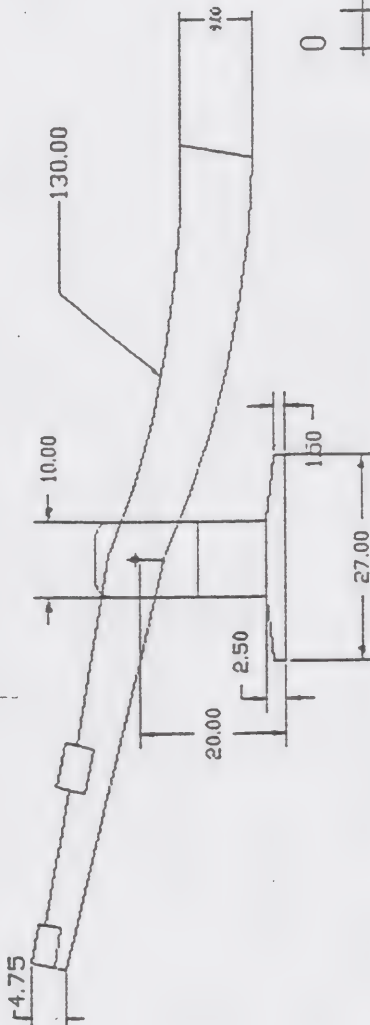


PLAN VIEW OF BASE

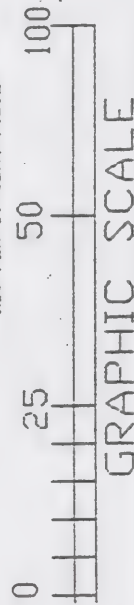


PLAN OF HOLDING CLIP

31 MM FOR 50 CENTS
25 MM FOR 25 CENTS
DIMENSION VARIES
CROSS SECTION AT
HOLDING CLIP
0.90 FOR 25 CENT PIECE
1.50 FOR 50 CENT PIECE



ELEVATION OF DETECTOR



A. GEORGE MALLIS, P.E.
CONSULTING ENGINEER
208 REEDS LANDING
SPRINGFIELD, MA. 01109

DETAILED DRAWING OF J. A. THOMPSON
COUNTERFEIT COIN DETECTOR
PATENT NO. 189,284: APRIL 3, 1877

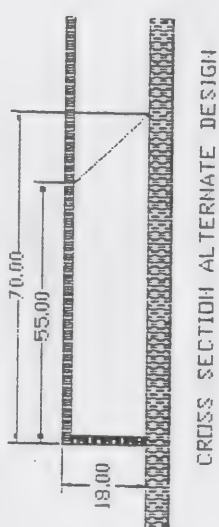
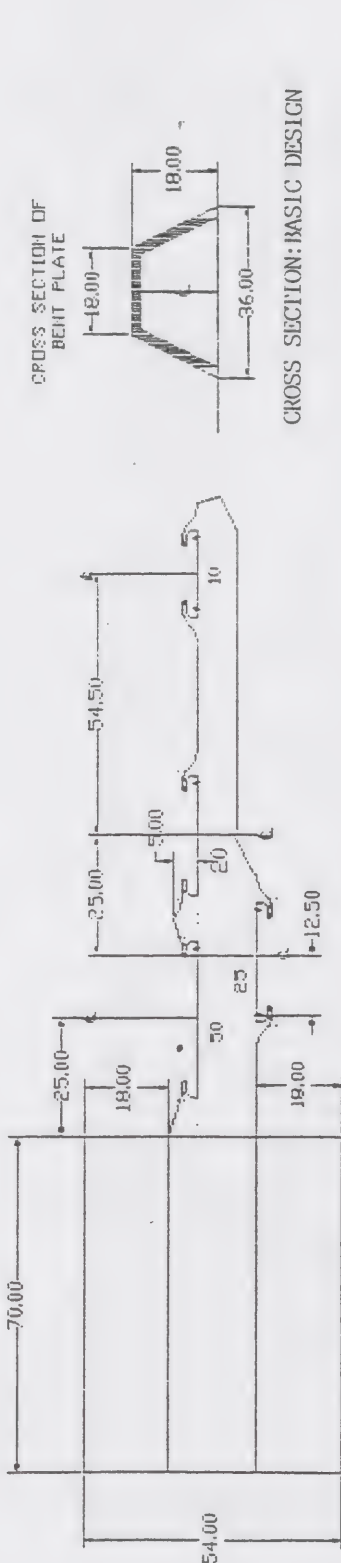
scale varies

date: 1993

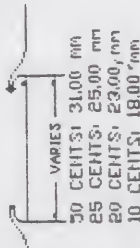
drawn

revised

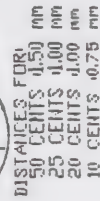
Engineering drawing
From Patent Office
patent documents
Copyright © 1993



TYPICAL COIN SLOT
CONFIGURATION

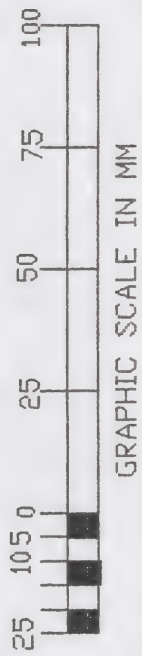


TYPICAL COIN SLOT
TOOTH DETAIL
R=VARIES



PLAN OF ALTERNATE DESIGN

R=0.25

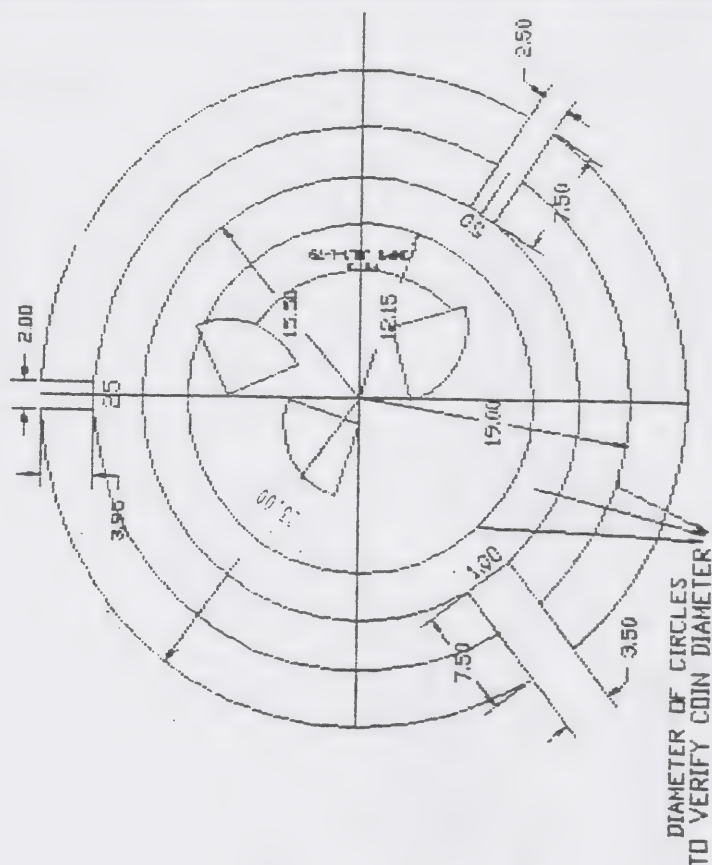


A. GEORGE MALLIS, P.E.
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208 REEDS LANDING
SPRINGFIELD, MA, 01109

DETAILED DRAWING OF J. W. SUTTON
COUNTERFEIT COIN DETECTOR
PATENT NO. 188,982: MARCH 27, 1877

scale varies
date 1993
drawn
revised

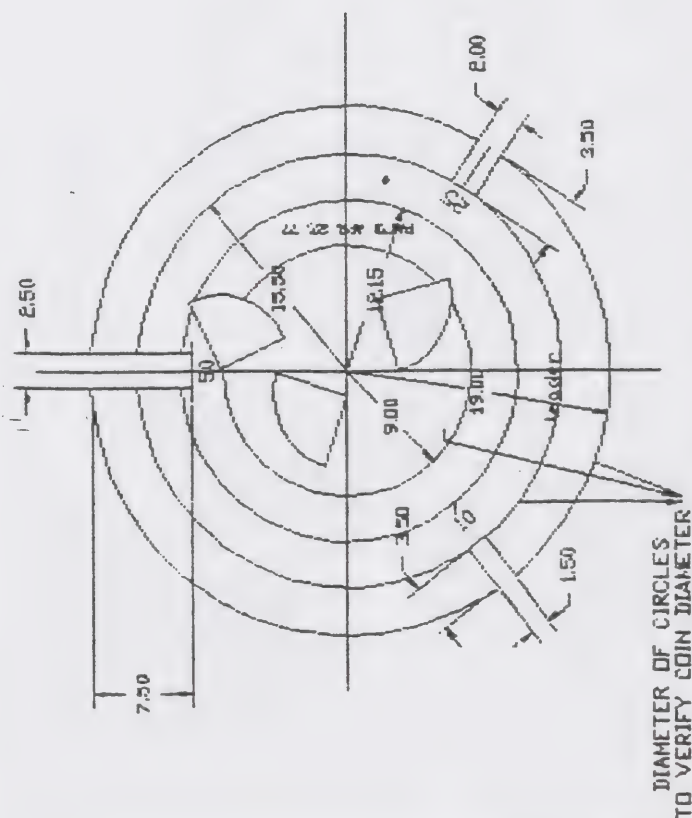
Engineering drawing
from an actual CCD
in authors collection
Copyright © 1993



PATENT IMPROVED FOR SUTTON
COUNTERFEIT COIN DETECTOR
DATED: JULY-1-79

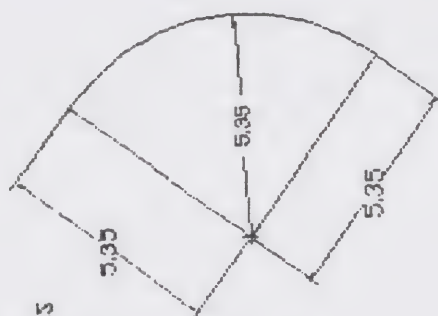
THICKNESS: 3.175 mm
WEIGHT: 41.36 GRAMS

MATERIAL: NICKEL PLATED, BRASS
DIMENSIONS ARE IN MILLIMETERS



PLAN OF THE SUTTON
COUNTERFEIT COIN DETECTOR
PAT. NO. 188,982

WEIGHT = 28.925 GRAMS
THICKNESS OF DEVICE = 2.80 mm
MATERIAL IS NICKEL PLATED, BRASS



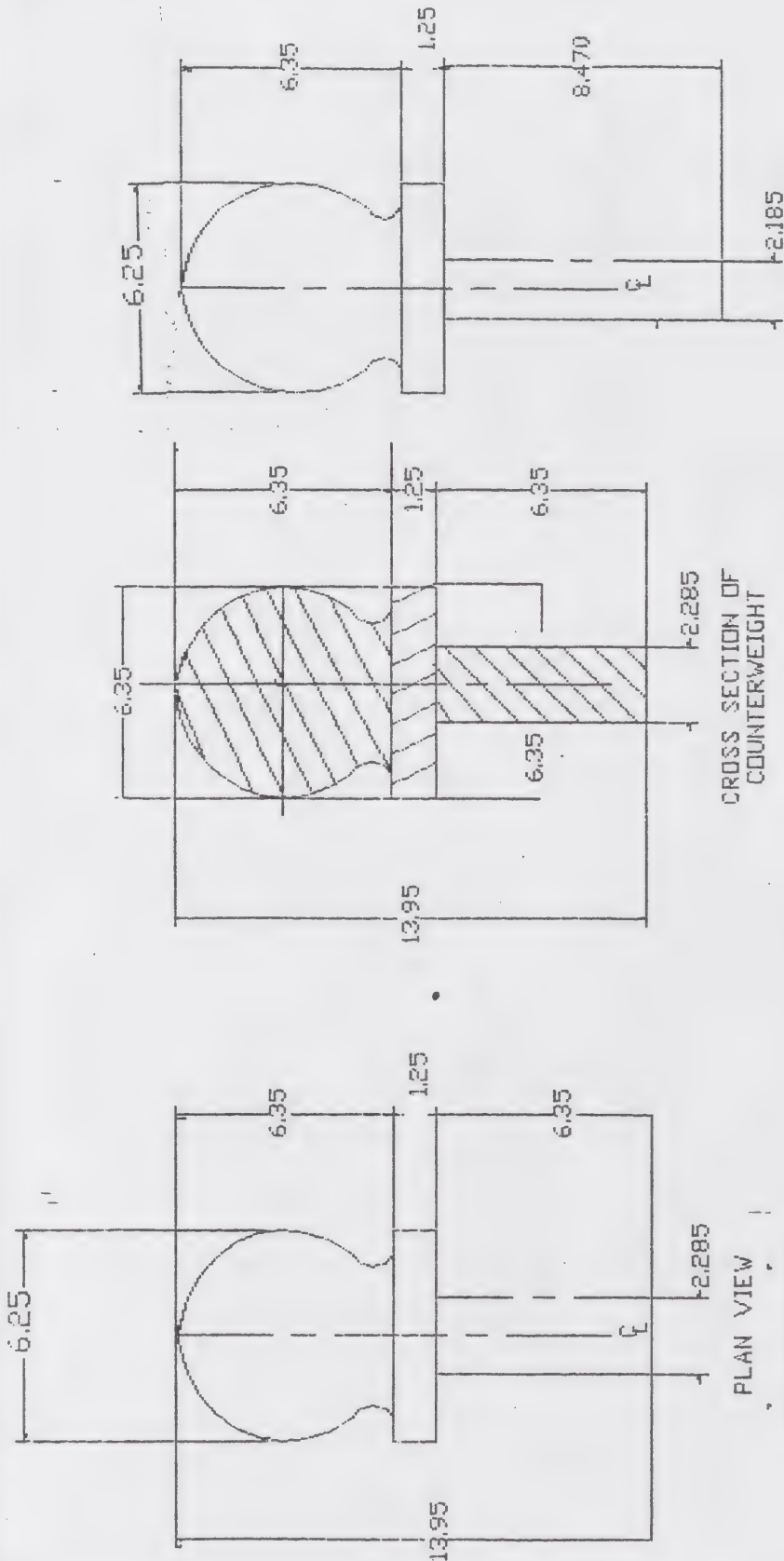
DETAIL OF THE
PEN KNIFE SLOTS

A. GEORGE MALLIS, P.E.
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208 REEDS LANDING
SPRINGFIELD, MA. 01109

DETAILED DRAWING PREPARED
BY A. GEORGE MALLIS, P.E.
FROM McNALLY HARRISON
ORIGINAL COUNTERWEIGHT

scale: varies
date: 1993
drawn:
revised:

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A. GEORGE MALLIS, PE



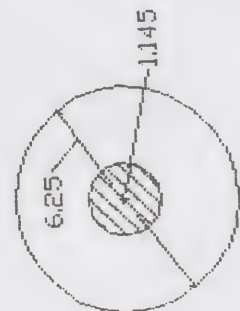
PLAN VIEW
ELEVATION OF
COUNTERWEIGHT

CROSS SECTION OF
COUNTERWEIGHT

PLAN VIEW
ELEVATION OF
COUNTERWEIGHT

WEIGHT = 2.090 GRAMS
McNALLY CCD
COUNTERWEIGHT
(FOR McNALLY CCD HAVING
2.2 MM HOLE)
NICKEL PLATED BRASS

WEIGHT = 2.090 GRAMS
McNALLY CCD
COUNTERWEIGHT
(FOR McNALLY CCD HAVING
3 MM HOLE)
NICKEL PLATED BRASS



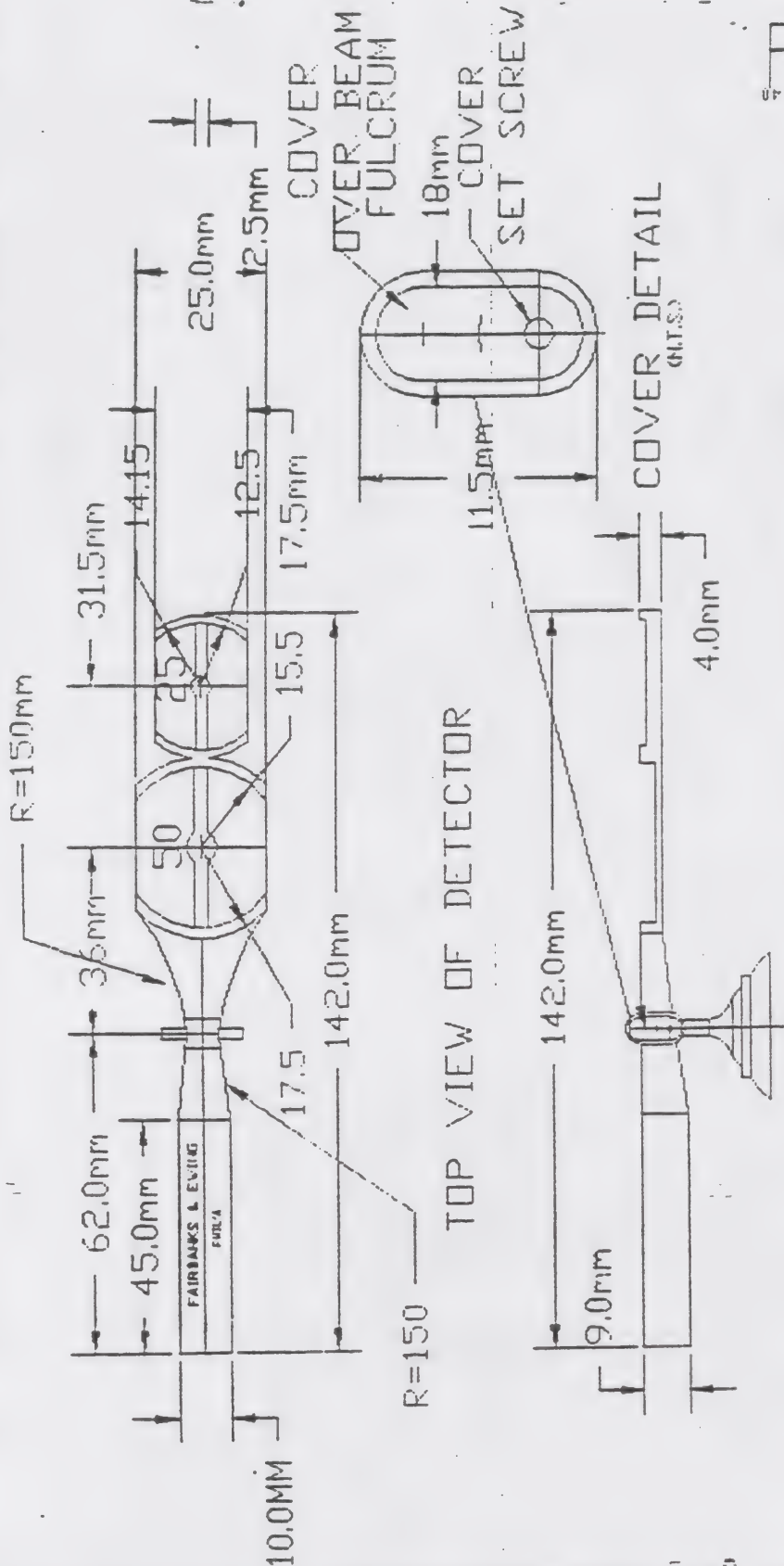
CROSS SECTION

A. GEORGE MALLIS, P.E.
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208 REEDS LANDING
SPRINGFIELD, MA, 01105

DETAIL DRAWING OF FAIRBANKS & EWING
COUNTERFEIT COIN DETECTOR
NO KNOWN PATENT
(Model in Betty collection)

scale: graphic
date: 1995
drawn:
checked:

Engineering drawing
From actual example
Copyright © 1995



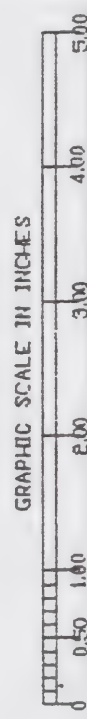
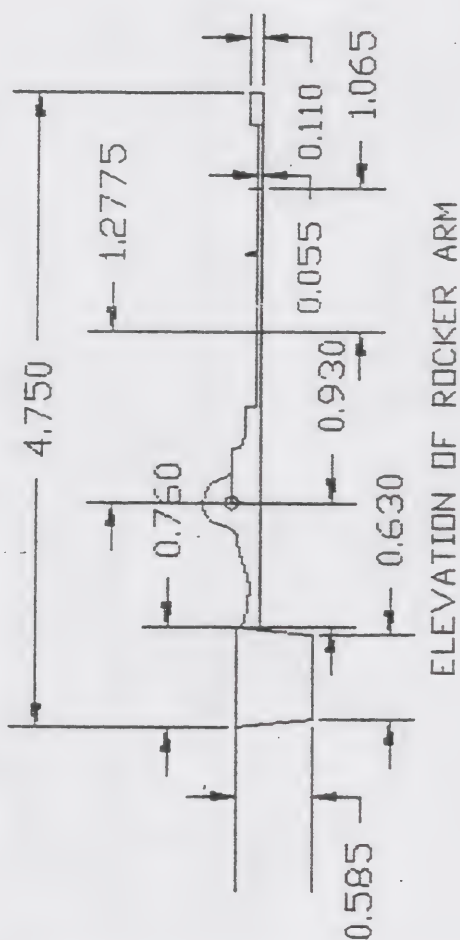
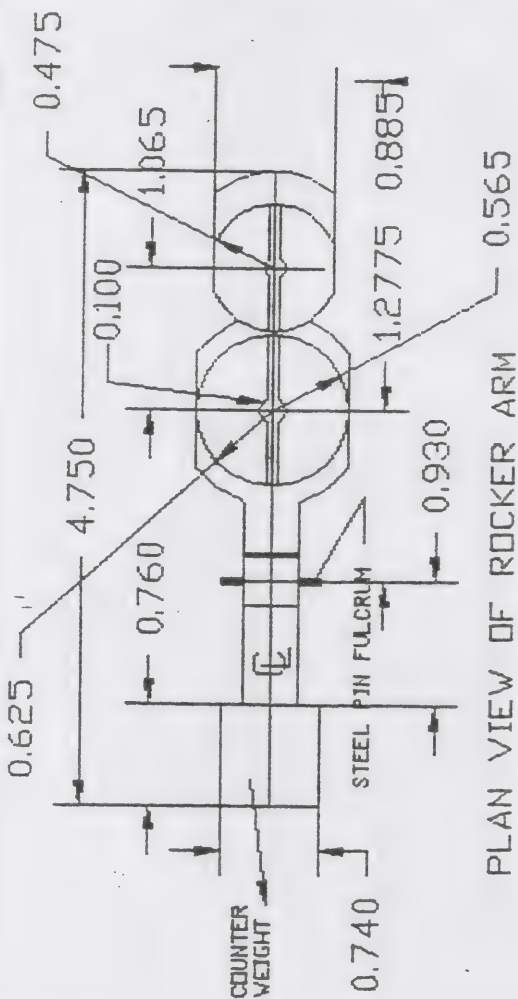
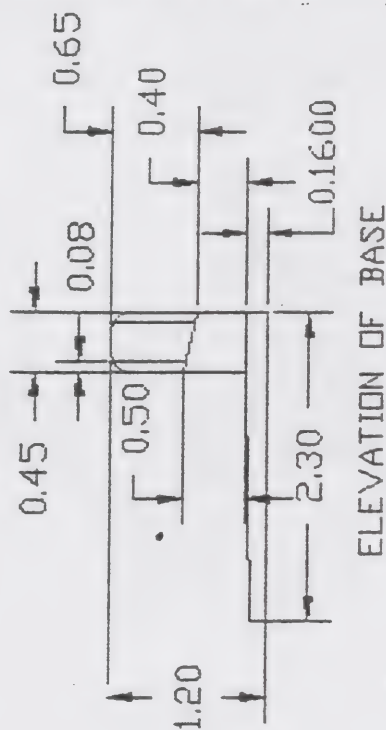
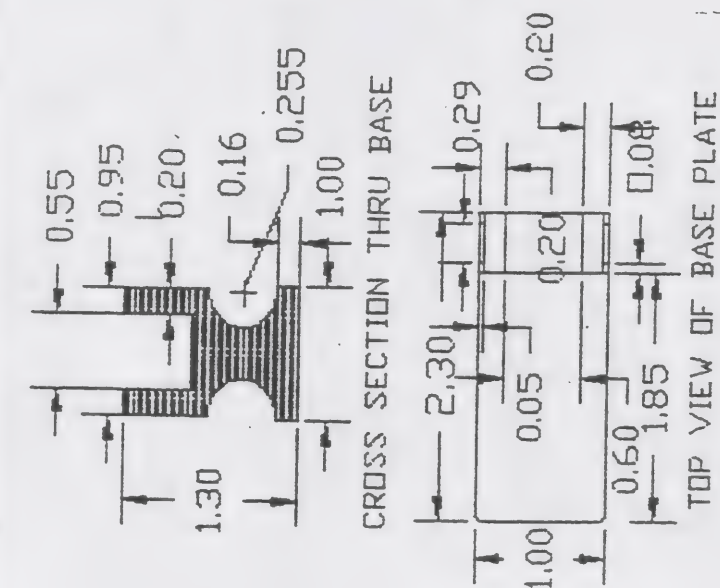
A. GEORGE MALLIS, P.E.
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SPRINGFIELD, MA, 01109

DETAIL DRAWING OF CHARLES F. SEYMOUR
COUNTERFEIT COIN DETECTOR FOR
25¢ & 50¢ US COINS

scale: graphic
date: 1993
drawn by
checked by

Engineering data from
mode in Authors
collection

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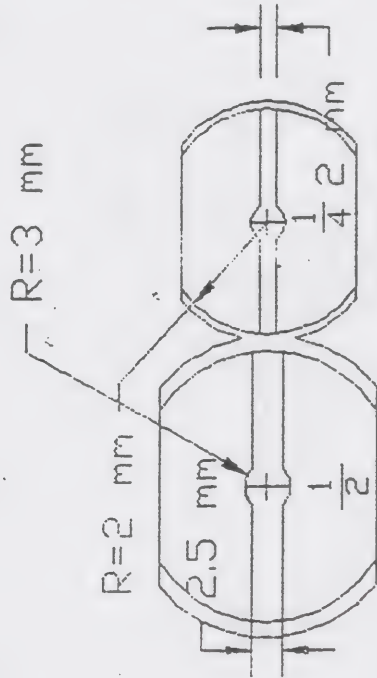


A. GEORGE MALLIS, P.E.
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SPRINGFIELD, MA. 01109

DETAIL DRAWING OF MOORE'S
COUNTERFEIT COIN DETECTOR
NO KNOWN PATENT
(Model in authors collection)

scaleGraphic
date: 1995
drawn:
checked:

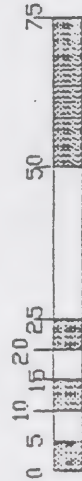
Engineering drawing
From actual example
Copyright © A.G. Mallis
& Eric P. Newman



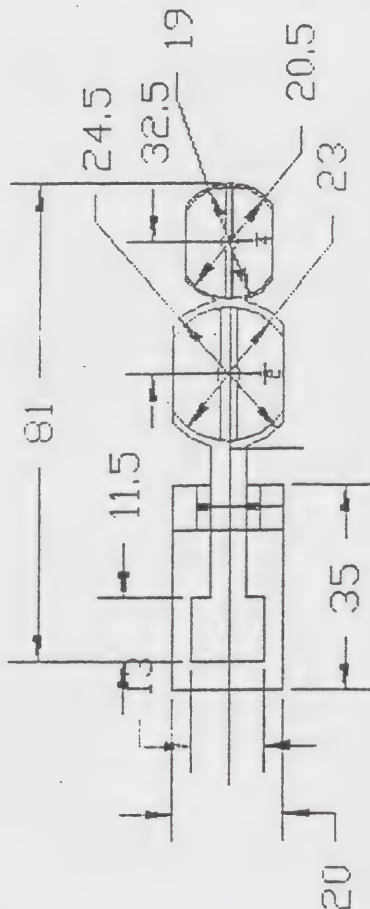
ENLARGED DETAILS OF SCALE PANS (SEE PLAN VIEW FOR PAN RADII)

DIAMETERS OF U.S. GOLD COINS

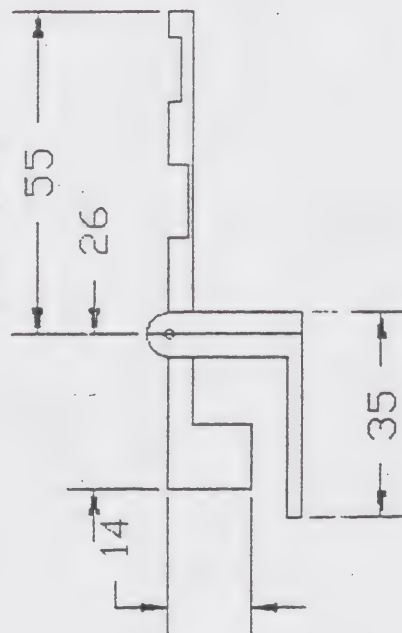
| FIVE DOLLAR | |
|-----------------------|---------|
| 1795-1834 | 23.8 mm |
| 1834-1839 | 22.5 mm |
| 1840-1929 | 21.6 mm |
| TWO & ONE HALF DOLLAR | |
| 1796-1821 | 18.5 mm |
| 1821-1839 | 18.2 mm |
| 1840-1929 | 18.0 mm |



SCALE IN mm



PLAN VIEW



CROSS SECTION

DETAIL DRAWING OF COUNTERFEIT
COIN DETECTOR FOR US 25¢ & 50¢
(silver coinage)
MAKER UNKNOWN BUT POSSIBLY BASED
UPON A SIMILAR GERMAN DEVICE

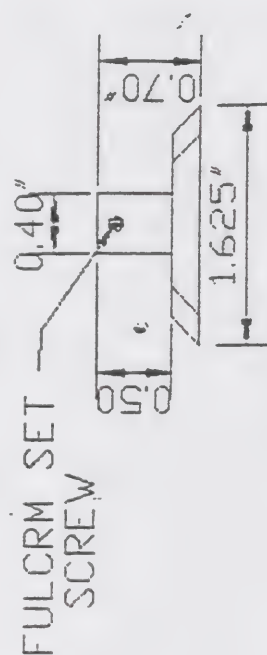
Copyright © 1994

Graphic

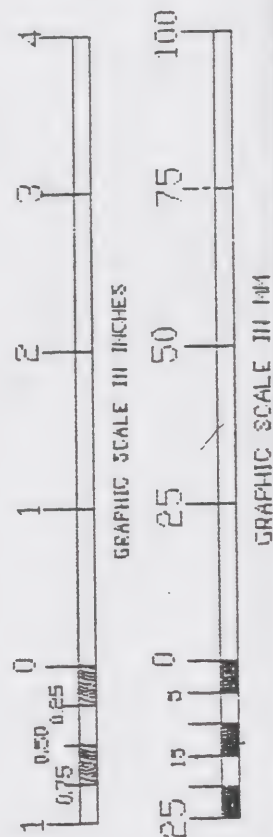
1994. 7661.

1001

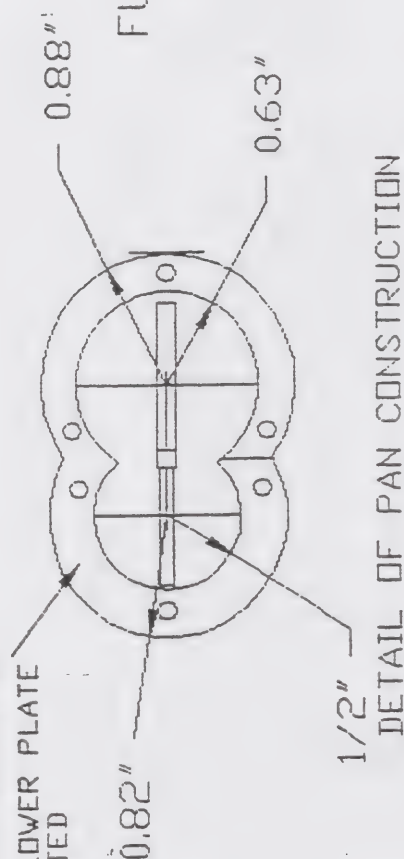
ipso facto.



DETAILS OF BASE



1/32" METAL SEGMENTS
LAID ON LOWER PLATE
AND RIVETED



DETAIL OF PAN CONSTRUCTION

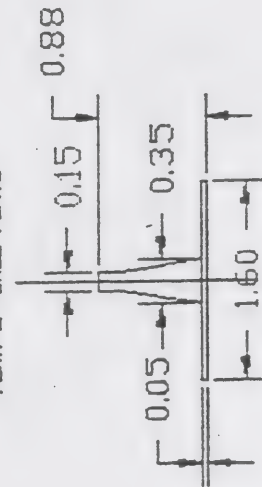
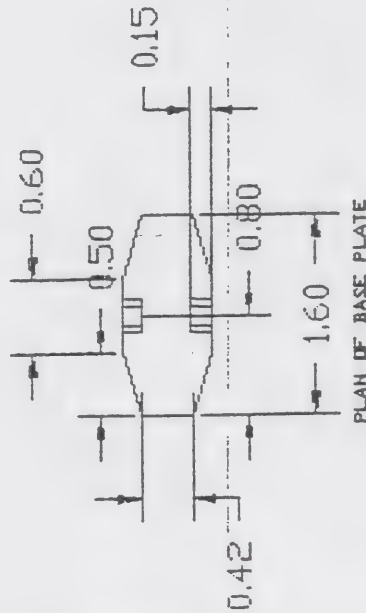
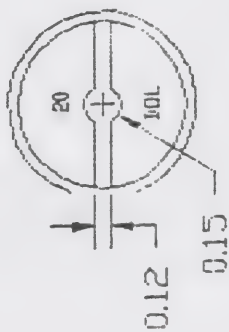
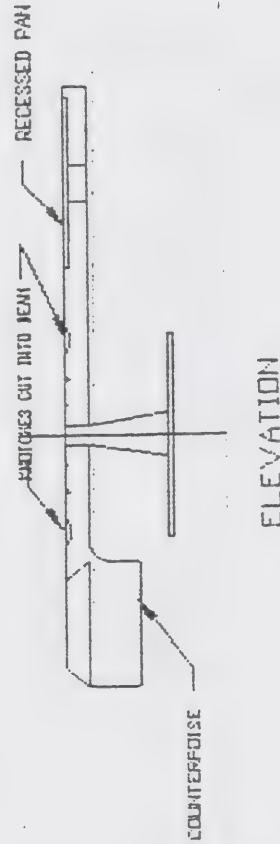
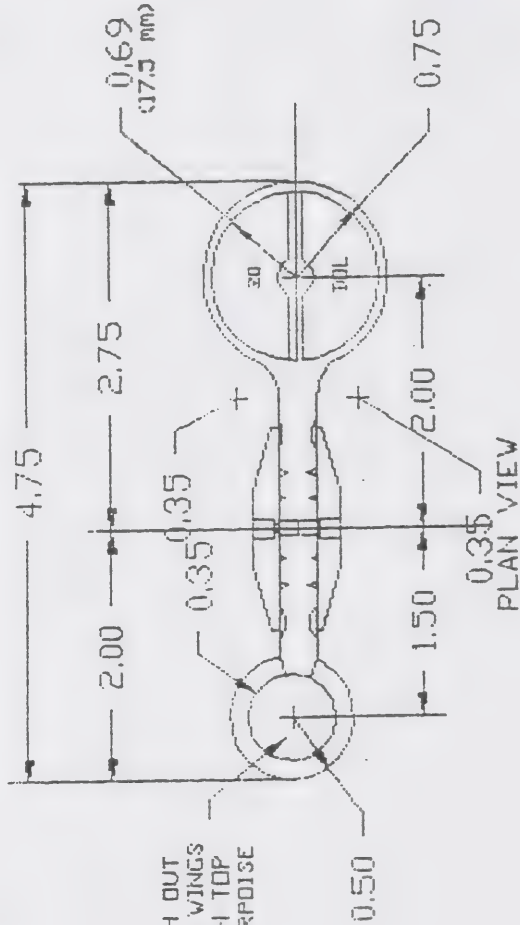
A. GEORGE MALLIS, P.E.
CONSULTING ENGINEER
208 REEDS LANDING
SPRINGFIELD, MA, 01109

DETAIL DRAWING OF COUNTERFEIT
COIN DETECTOR FOR \$20 US GOLD
MAKER UNKNOWN

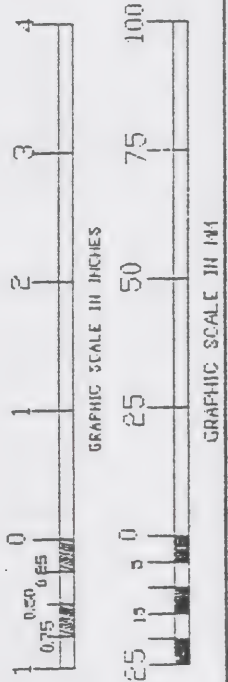
scale: Graphic
date: 1995
drawn:
checked:

Engineering data from
Data furnished by Wm.
Doniger, ISASC

Copyright © 1995



DETAILS OF BASE PLATE



APPENDIX D

EARLY COUNTERFEIT COIN DETECTORS AT THE PHILADELPHIA MINT

The U.S. Mint in Philadelphia owned three different counterfeit coin detectors as stated by Henry R. Linderman, Director of the U. S. Mint in a letter dated September 8, 1854 to S. T. Sturgut, Acting Commissioner of the U. S. Patent Office., and as clarified by James Ross Snowden, Superintendent of the U. S. Mint in Philadelphia, in a letter dated January 10, 1855 to C. Mason, Commissioner of Patents. These were:

1. An instrument invented and made by William N. Snider, a machinist at the U.S. Mint. That device had been previously mentioned with little detail by Jacob R. Eckfeldt and William E. DuBois in their *Supplement to the Manual of Coins and Bullion*, (Philadelphia 1850), p. 232 and in *New Varieties of Gold and Silver*, (Philadelphia 1850), p. 36. The instrument checked the diameter and thickness, as well as the weight of the coin. It was a rocker type in which the coin was held in a vertical position. It was used in the U. S. Assistant Treasurer's office in Philadelphia and at several banks and probably had no new patentable features and no patent was applied for. This detector was therefore at least four years old in 1854 and probably had no coin receptacles for testing the gold \$1 and \$20 piece because these had not yet been authorized or minted. No example of the Snider device has been located.
2. A rocker in which each coin holder is in a horizontal position. One had been purchased on Chestnut Street in Philadelphia in 1851-2 by the U. S. Mint and was at that time available at a trifling cost in several Philadelphia stationary shops. It had no makers name but was punched *WARRANTED*. It conforms precisely to a drawing originally submitted to the Patent Office in connection with the Allender patent application but the Mint's detector had a place for the first issue of the one dollar (\$1) gold coin while the first patent drawing did not. The one dollar (\$1) gold coin had probably been excluded from the first drawing to avoid the extra length in the device that would have been required in order to include it. The Allender drawing shown in the patent issued November 27, 1855 included the \$1 and \$3 coin holder and was a revision of the first drawing which was submitted in 1850, because the U. S. \$3 gold coin was first authorized in 1854. The \$20 coin holder was included in the first patent drawing of the device or that obvious omission would have been commented upon by the U. S. Mint officials.
3. A rocker made and invented by *F. Meyers & Co. (Myers)*, balance makers of Philadelphia, was described as varying somewhat from the other two mentioned detectors and as being more portable. It was owned by the U. S. Mint for several years prior to September 8, 1854. It is logical to conclude from the fact that it was said to be "more

EARLY COUNTERFEIT COIN DETECTORS
AT THE PHILADELPHIA MINT

portable" than the other two mentioned detectors that it was smaller. This could only have resulted from a device with turns. The only known Myers detector has two turns and is only 5 inches in length as compared to the Allender device which has a length of 8.5 inches.

There is a great deal of confusion and conjecture concerning these devices and how they were applied to the initial Allender Patent application. This matter is discussed in Chapter II, Section 2 hereof.

Appendix E includes basic information on the Myer's gold coin detector that may have been the smaller above mentioned object.

APPENDIX E

FREDRICK MYERS GOLD COIN DETECTOR

Fredrick Myers, of Philadelphia, made a U. S. gold coin detector before April 19, 1850. It has horizontal holders only for the five U.S. gold coins then current and prior to the introduction of the \$3 gold coin in 1854.

The Myers detector is mentioned by description, but not by name, in the patent papers filed by John Allender in his first rejected application of April 19, 1850. It is described as a:

balance for proving coins have been made with two levers hung upon one fulcrum so arranged as to weigh all the coins on one side of the said fulcrum and when the larger coins were weighed the lever in the small ones are made is turned to the opposite side of the fulcrum.

There is only one Myers device known, a brass rocker with one active lever arm and two turns.

The rocker, as previously developed in Europe, consisted of a fulcrum bearing on a stand with the fulcrum supporting the active lever arm or beam. There was a fixed weight for one side of the beam and a coin holder or holders on the other side. The rocker would have the fixed weight on its beam touching its base when no coin was in the holder and which would raise to a horizontal position when a genuine coin was placed in its proper holder on the other arm of the beam. The fixed weight arm would not move if a light weight coin was in the holder. The English counterfeit coin detectors had a fixed weight which could be adjusted for one or two additional coins by swinging a hinged portion of the fixed weight nearer to or farther from the fulcrum to accommodate up to three separate denominations of coin in the same holder on the active arm side. The hinged pieces in the fixed weight side were designated as *turns*. The problem in the United States then, was that five (later six) gold denominations would have to be individually weighed. To have a fixed weight on one side of the beam, there would have to be five holders on the other side, the center of the \$1 coin holder had to be 20 times as far from the fulcrum as the center of the holder for the \$20 coin. This would make the detector much too long. To add a turn or two to the fixed weight side would require two rows of three holders or three rows of two holders on the active arm of the beam, requiring the beam to become too wide.

Myers found a solution which was totally new in concept. He hinged some of the holders in a manner so that they could be swung over from the active side of the beam to the fixed weight side of the beam. He placed two hinged holders on top of the beam holder. The beam holder held the \$20 and \$10, on top of which was the hinged arm for the \$5 holder above which was the arm for the \$2.50 and \$1 holder. Thus when \$2.50 or \$1 gold was tested the fixed weight side was at its minimum weight. When the \$5 gold was tested

FREDRICK MYERS GOLD COIN DETECTOR

the active arm for the \$2.50 and \$1 holders had been swung over to add to the weight of the fixed weight side. When the \$20 and \$10 coin was tested both hinged arms were swung to the fixed weight side. The same pin held both of the hinged holder arms and was mounted in a bearing on the top of the beam below. This required the weight of each hinged holder arm the exact weight needed for its two functions, one as a coin holder arm and the other as a fixed weight side addition.

Note: The name FREDRICK is also noted as FREDERICK in some records.

(For more see III-2-13, F-1)

APPENDIX F

HENRY TROEMNER AND THE MYERS-TROEMNER RELATIONSHIP

The relationship of Frederick Myers to Henry Troemner was close, but complex, both being in the scale business in Philadelphia. Just as the Myers had various spellings in his printed material, the name Troemner was misspelled Froemer, Troomner and Tromner, in printed form. Myers is first listed as scalemaker at 492 N. Second Street, Philadelphia in *McElroy's Directory* of 1840. This information was customarily obtained in the prior year. By 1842, he had moved to 324 High Street (Market) and by 1844 to 196 High under the name *Frederick Meyer & Co.* The first directory listing of Troemner is in *McElroy's Directory* in 1844 at 196 High Street, the same address the firm of Frederick Meyer & Co., then had. They both remained separately listed at that address through the 1851 directory. Frederick Meyer & Co. moved to 240 High Street by 1852 and Troemner's listing changed to the same address by 1853.

From 1854 onward, there are no further Myers listings, while the Troemner listing continues in and after 1854 for many years. There is an advertisement in the 1856 *Philadelphia Merchants' & Manufacturers' Business Directory* which reads *Henry Froemer, Co., 240 Market Street, Manufacturer of Scales and Weights, Successor, and late Partner of F. Myers & Co.* The misspelling of Troemner was apparently partly due to the similarity of a script capital T to a script capital F.

Subsequent biographical material covering Henry Troemner indicates that he was born in 1809 in Hesse-Cassel, Germany and came to America as a trained locksmith about 1836. His partnership with Myers must have been short lived and had ended before Troemner became successor to Myers in about 1853.

In an advertisement published in the 1846 *Mercantile Register of Philadelphia*, Myers illustrated a platform scale, a grocery counter scale, an equal arm coin or pharmaceutical scale and a hand held balance. A brass counterfeit coin detector scale made about 1850 is stamped *F. MEYER PHILA*, in two lines. In the 1849 supplement to *New Varieties of Gold and Silver Coins, Counterfeit Coins and Bullion*, written by Eckfeldt and Dubois, an unidentified detector scale used by the U. S. Mint is referred to and apparently was his.

Myers, as a scalemaker for the U. S. Mint, was omitted by Henry Troemner in the history of his business. According to the 1875 and subsequent histories of Henry Troemner's business, Troemner constructed all of the balances and weights for the U.S. Mint in Philadelphia, the branch mints, the U.S. Assay Offices, the U.S. Treasury and many banks. After Myers, that claim is justified. The growth of the Troemner business resulted in the construction of a large factory in 1864 at the northeast corner of Twenty-second and Master Streets in Philadelphia. The catalogs of the Troemner factory products indicate the business was established in 1840 but that refers to the begin-

THE MYERS - TROEMNER RELATIONSHIP

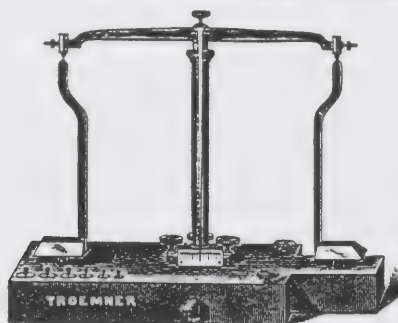
ning date of the Myers business.

It is difficult to determine when the first Troemner counterfeit coin detecting devices were made. The name *H. TROEMNER PHILA* is punched onto brass rockers made to check 25 and 50 cent U.S. silver coins in horizontal holders with diametric and thickness gauges. There are also identical rockers found without any name stamped upon them. The introduction of quantities of counterfeit U. S. 25 and 50 cent silver coin before the middle of the 19th century caused this need, but there is no evidence to date these accurately. Henry Troemner died in 1873 but his name was continually used thereafter on business products.



Assay Balances,
Bank Balances,
Platform Scales,
Post Office Scales,
Gold " "
Druggist Counter Scales,
" Prescription "
Grocers' Scales,
Butchers' "
Bevringer's French }
Counter Scales, }
AND
Weights of all sorts and
sizes.

COIN BALANCE, FIG. 260



This balance is designed for very rapidly ascertaining the least current value of coin. It can be set up on a counter or shelf, and the coins, one at a time, passed over the right-hand pan in rapid succession. This end of the hardwood platform is shaped so as to allow the coins to be pushed off the pan and fall into a receptacle in rapid succession. Balance is fitted with screw-leveling feet and level and a set of Least Current Weights for \$20.00 down (fitted into the platform) are supplied.

(From Troemner Catalogue)

(From Dye's Govt Counterfeit Detector, May 1879)

Established in 1840.

HENRY TROEMNER,

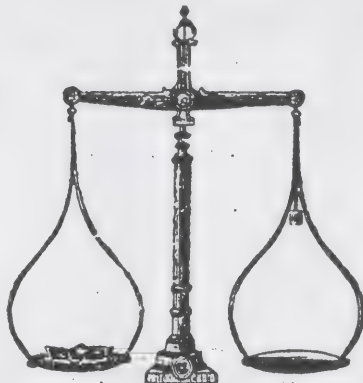
710 MARKET STREET, PHILADELPHIA.

MANUFACTURER OF

BANK SCALES

AND

Bullion Balances.



BANK SCALES

AND

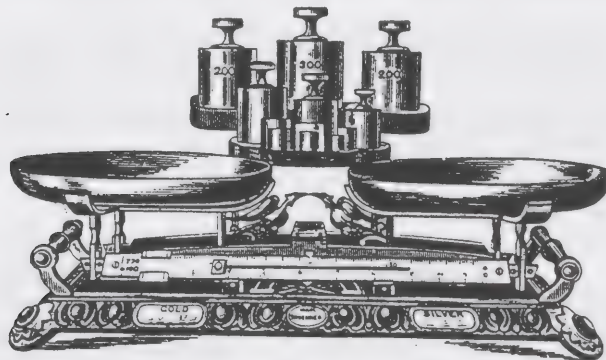
Bullion Balances.

COIN SCALES,

IN USE AT ALL THE UNITED STATES MINTS AND IN EVERY DIVISION OF
THE TREASURY DEPARTMENT.

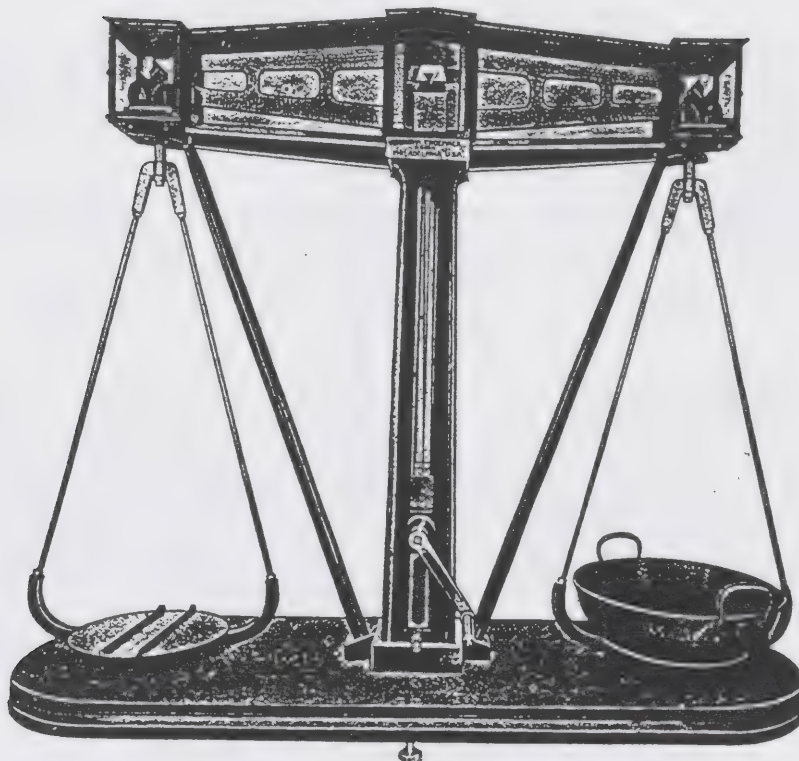
CATALOGUE ON APPLICATION.

TROEMNER'S IMPROVED SPECIE SCALE, FIG. 187



A new and improved specie scale, designed for banks and bankers. The scale takes up but little room and weighs, with the greatest accuracy, a single gold dollar up to a thousand dollars of silver at a single draft. It will verify the count and give the actual value of abraded or of the least current coin. It is provided with a full set of brass weights conveniently arranged, and a tare beam by which the amount of shortage is instantly ascertained, be it one dollar or twenty. The side beam has four graduations—for gold, Trade dollars, Standard dollars and subsidiary coin. To weigh a draft of coin we proceed as follows: Supposing we desire to weigh \$5000 in gold; we look at the table and find the weight required is 268.75; we place the 268 ounces in the LEFT-hand pan and slide the ounce poise A to 75; then put the coin in the RIGHT-hand pan. Should the coin weigh light we slide the poise B along the beam until the scale balances. If this takes place with the poise at, say, 20, it signifies that the coin is that many dollars short.

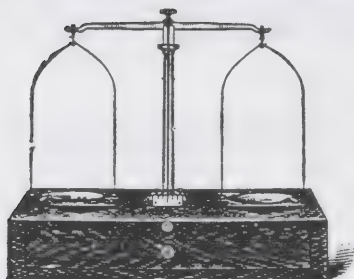
SPECIAL BULLION BALANCES



As used in the United States Mints at Philadelphia, San Francisco and Denver; United States Assay Offices at New York, Seattle, Deadwood, Helena, etc.; mints of China at Tientsin and Peking; in Canada, Mexico, etc.

These balances are designed for large capacity weighings, where the maximum of accuracy is required.

GOLD COIN BALANCE, FIG. 2822



This balance is mounted on a mahogany box with drawer; has a set of Least Current Weights supplied with it; has steel knives and bearings. Its operation is the same as described for Fig. 2820, except it has no rider and small weights must be used to establish the value.

| No. | Code Word | Capacity | Sensibility | Dia. Pans | Length Beam | Price Steel Bearings |
|-------|-----------|----------|-------------|-----------|-------------|----------------------|
| 2822. | Hopin | 2 oz. | 1/50 grain | 3" | 6" | |

APPENDIX G

UNITED STATES COIN WEIGHTS

Set of six (6) brass coin weights for weighing United States gold coins as follows:

1. Two and one half dollar (\$2½)
2. Five dollar (\$5)
3. Ten dollar (\$10)
4. Twenty dollar (\$20)
5. Thirty dollar (\$30); not a U.S. denomination but needed if one were to try and weight five, twenty dollar coins in one weighing.
6. Fifty dollar (\$50)

The two and one half and five dollar coin weights are of the flat disk type while the rest are of the cylindrical type.

The weights of United States gold coins had the following weights in grams;

| DENOM. | DATE | WT. OF COIN |
|-----------|----------------------------------|------------------------------|
| \$2½ Dol; | 1796-1834 | 4.374 Grams |
| | 1834-1839 | 4.374 Grams |
| | 1840-1907 | 4.180 Grams |
| | Weight of coin weight | =4.105 Grams |
| | Diff. in weight: 4.180 - 4.105 | = 0.075 Grams (1.157 Grains) |
| \$5 Dol; | 1795-1834 | 8.748 Grams |
| | 1834-1838 | 8.360 Grams |
| | 1839-1929 | 8.359 Grams |
| | Weight of coin weight | =8.325 Grams |
| | Diff. in weight: 8.359 - 8.325 | = 0.035 Grams (0.54 Grains) |
| \$10 Dol; | 1795-1804 | 17.500 Grams |
| | 1838-1907 | 16.718 Grams |
| | Weight of coin weight | =16.665 Grams |
| | Diff. in weight: 16.718 - 16.665 | =0.063 Grams (0.97 Grains) |
| \$20 Dol; | 1850-1907 | 33.436 Grams |
| | Weight of coin weight | =33.385 Grams |
| | Diff. in weight: 33.436 - 33.385 | =0.051 Grams (0.94 Grains) |
| \$50 Dol; | | 83.590 Grams |
| | Weight of coin weight | =83.532 |
| | Diff. in weight: 83.590 - 83.532 | =0.038 Grams (0.59 grains) |

All of the weights in the coin weights are within the legal tolerances prescribed by law under the gold coinage acts.

UNITED STATES COIN WEIGHTS

APPENDIX G

[G-1]

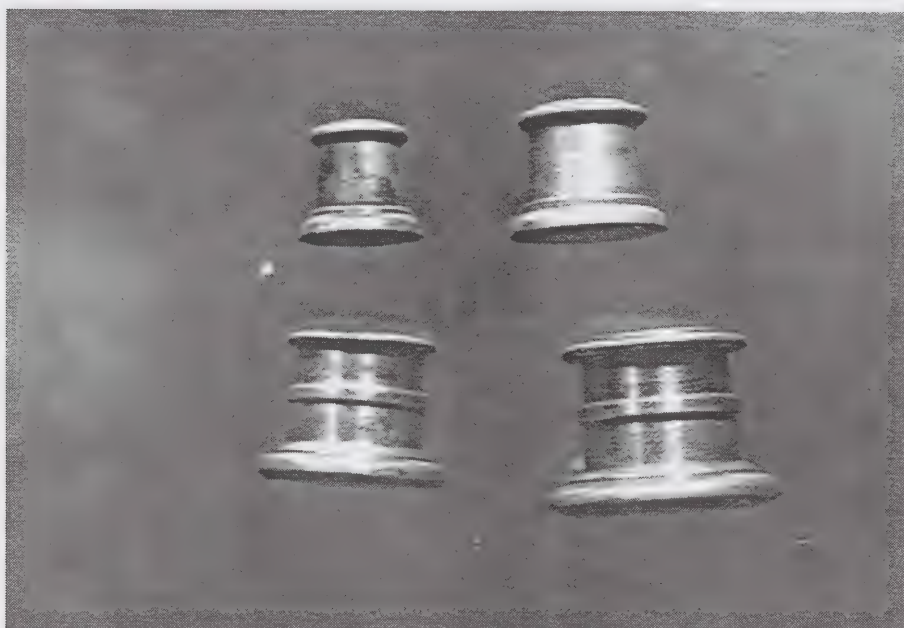
The \$30 coin weight has a value of 50.150 grams. With the \$20 and \$10 coin weights combined, the total value would be 16.715 plus 33.436 = 50.151 Grams.

Diff. in weight: $50.151 - 50.150 = 0.001$ Grams heavy $= 0.015$ Grains

TOP VIEW OF WEIGHTS

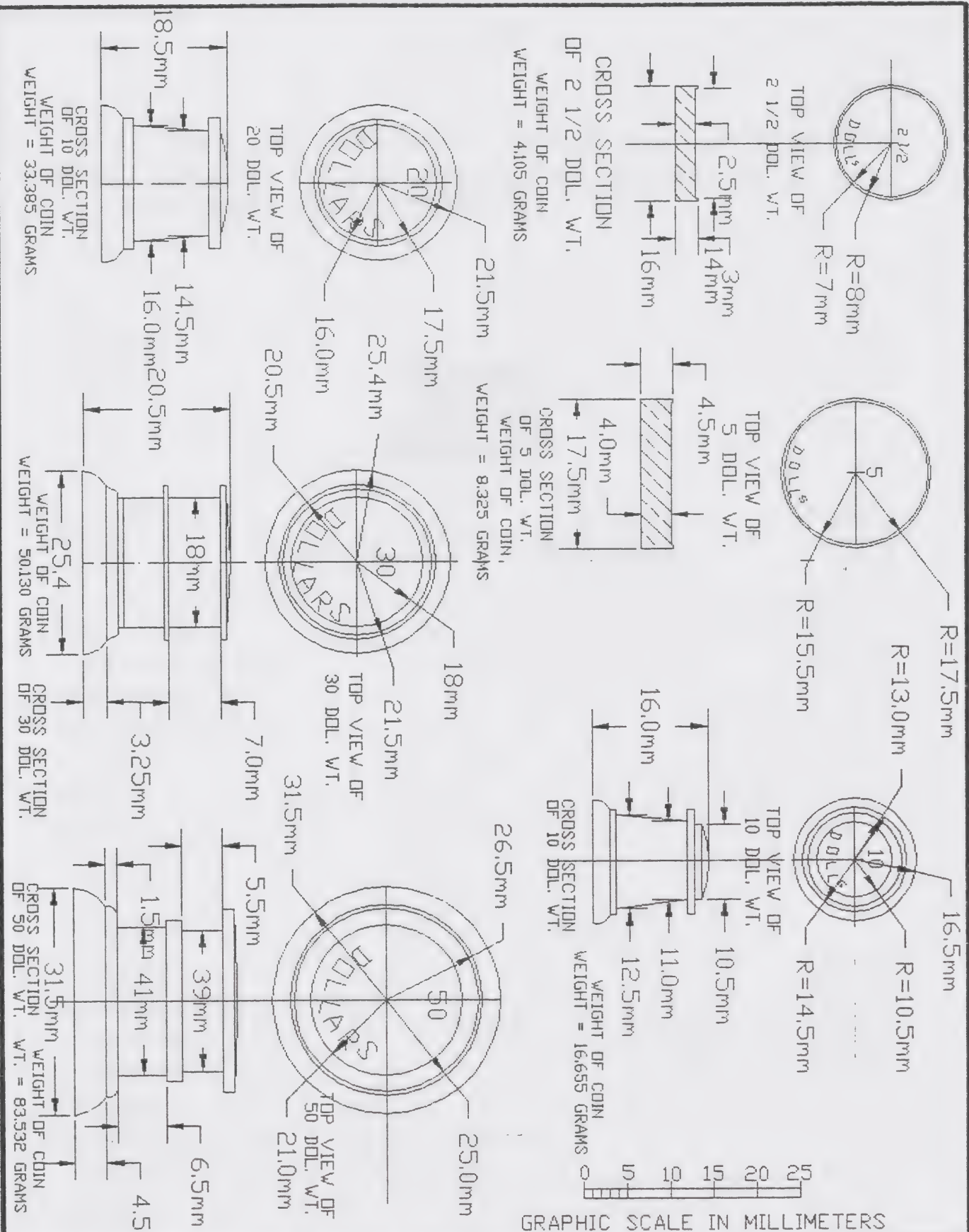


SIDE VIEW OF WEIGHTS



UNITED STATES COIN WEIGHTS

APPENDIX G
[G-2]



| | | | |
|------------------------|------|--|--|
| SHEET NO. 1 OF 1 | REV. | DETAILS OF UNITED STATES COIN WEIGHTS IN THE COLLECTION OF ERIC P. NEWMAN COPYRIGHT © 1995 BY ERIC P. NEWMAN & A. GEORGE MALLIS | A. GEORGE MALLIS, P.E. 788 STONY HILL ROAD WILBRAHAM, MA., 01095 |
|------------------------|------|--|--|

(E. & T. Fairbanks and Company 1902 Catalogue)



COIN WEIGHTS. Fig. 3.

In mahogany, velvet lined box; twenty dollar piece and down, including grain weights, all United States Mint standard.

Price.....\$5 00

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